

AMERICAN RAILROAD JOURNAL, AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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D. K. MINOR, and
GEORGE C. SCHAEFFER, } EDITORS AND
 } PROPRIETORS.

SATURDAY, DECEMBER 24, 1836.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, DECEMBER 24, 1836.

TO CONTRACTORS

STONE CUTTERS and MASONS.
JAMES RIVER and KANAWHA CANAL.—Contractors for mechanical work are hereby informed that a large amount of Masonry, consisting of Locks, Culverts, and Aqueducts, is yet to be let on the line of the James and Kanawha Canal.

Persons desirous of obtaining such work, and prepared to exhibit proper testimonials of their ability to execute it, will apply at the office of the subscriber in the city of Richmond.

Stone Cutters and Masons wishing employment in the South during the winter months, may count with certainty on receiving liberal wages, by engaging with the contractors on the work.

CHAS. ELLET, Jr., Chief Eng. J. R. & K. Co.
Richmond, Nov. 29, 1836. 51—6t

A CARD.—The Commissioners of the New-Jersey, Hudson, and Delaware Railroad Company having met at No. 34 Wall-st., New-York, pursuant to notice, Resolved, that in consequence of the extreme pressure of the money market it is expedient to adjourn to a future day, of which due notice will be given.

SAMUEL FOWLER, JOSEPH CHANDLER,
WILLIAM HYBROGER, DANIEL HAWES,
SAMUEL PRICE, JOHN J. BLAIR,
JOSEPH E. EDSALE, ENOS GOBLE,
COMMISSIONERS.
Dec. 16, 1836. 51—1t

AMERICAN LOCOMOTIVES.

By the following advertisement, we learn—and it affords us pleasure to call to it the attention of our readers interested in Railroads—that Messrs. ROGERS, KETCHUM & GROSVENOR, of Patterson, New-Jersey, have added to their extensive machine shops, one for LOCOMOTIVE ENGINES.

We have more than once enjoyed the pleasure of a visit to their works, where we found ample evidence of the truth of a re-

mark often made by us, that, "to whatever branch of manufacture our countrymen turn their attention, they are sure to excel"—and so, we doubt not, it will be in this new branch of business, undertaken by this enterprising House—and we hope soon to learn, that their skill in this branch has been as successful as in others.

In a few years, we shall not see an imported Locomotive on an American RAILROAD.

MACHINE WORKS OF ROGERS,

KETCHUM and GROSVENOR, Patterson, New-Jersey. The undersigned receive orders for the following articles, manufactured by them, of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

RAILROAD WORK.

Locomotive Steam-Engines and Tenders; Driving and other Locomotive Wheels, Axles, Springs and Flange Tires; Car Wheels of cast iron, from a variety of patterns, and Chills; Car Wheels of cast iron, with wrought Tires; Axles of best American refined iron; Springs; Boxes and Bolts for Cars; Cotton Wool and Flax.

Machinery of all descriptions and of the most improved Patterns, Style and Workmanship.

Mill Geering and Millwright work generally; Hydraulic and other Presses; Press Screws; Callenders; Lathes and Tools of all kinds, Iron and Brass Castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, New-Jersey, or 60 Wall-street, N. Y.
51st

DESTRUCTION OF THE PATENT OFFICE.

Our readers will hear with surprise and regret, that the entire Patent Office and its contents have been destroyed by fire.

The destruction commenced in the General Post Office, under the same roof, and could not be arrested until the entire building was in ruins.

The vast collection of models, drawings, &c., the result of the combined ingenuity of the United States for years, is thus swept from existence—a loss never to be repaired.

What effect this accident will have upon

the proceedings of the Office, we cannot say. Certainly much useless lumber is removed, for which regret in the slightest degree cannot be felt. It would be prudent in all, having unfinished business at this Office, to ascertain the position in which they are left, and repair any deficiencies caused by the fire, without delay.

It is a disgrace to us as a nation, that we cannot place our public offices, especially those of record, in buildings that are fire and water proof. Buildings for the use of the Patent Office, it is true, are now in progress, but they should have been erected long ago.

It is to be hoped, that every effort will be made to expedite their completion, while no expense should be spared in rendering the office every way suited to the wants of the department.

SYRACUSE, Dec. 12, 1836.

TO D. K. MINOR, AND GEO. C. SCHAEFFER.

GENTLEMEN:—I am now able to give you a good account of the Grist, or Flouring Mill, put up at Cato four Corners in Cayuga county. It is now in successful operation and works beyond our expectations.

You will recollect that we have put up an engine there with arms of twelve feet in diameter with the shaft placed perpendicular, receiving the steam at the lower end, which, when worked at 120 lbs. to the square inch, will nearly raise the shaft, and arms from their bearing below, and therefore work with very little friction. This engine makes about one thousand revolutions per minute, and the works are driven by cog wheels, instead of bands, as in the

smaller engines, and we can give the stones any velocity we desire.

This engine was designed to drive *three* run of stones, and to use steam at 120 lbs. to the square inch, and to grind one hundred bushels of wheat to the cord of wood; and these anticipations have been more than realized, as we have the three run in operation, and grind eight bushels per hour, to each run, with *less* than 60 lbs. of steam to the square inch; and usually not to exceed three-fourths of a cord of wood to the hundred bushels. Another run might be driven with great ease.

The apertures in the arm of this engine are *each* $\frac{3}{8}$ of a square inch, but it is intended to reduce them *one half* at least, and use steam at 120 to 150 lbs. to the inch, when I have no doubt of being able to grind over 150 bushels of wheat with a cord of maple wood.

Since this mill was put into operation, two other companies have been formed to erect two other mills on the same plan, for flouring.

This experiment sustains my theory that the *long* arm is best, and I intend to make an engine with twenty feet arms, which, I have no doubt will work *one hundred horse power*.

I have many interesting facts, and shall have others in a few days, in relation to the rotary engine in this mill, which I will communicate to you, and in time, I hope for the next number of the *Mechanics Magazine*. In the mean time, I am truly yours.

WM. AVERY.

REPORT ON THE SURVEY OF A ROUTE FOR A RAILROAD FROM WATERTOWN TO ROME.

BY WILLIAM DEWEY, ESQ. TO

(Continued from page 786)

ORVILLE HUNGERFORD, ANDREW Z. McCARTY
WILLIAM SMITH, JOHN H. WELLS,
G. C. SHERMAN, AMEROSE CURTISS,
H. H. COFFEEN, S. N. DEXTER,
EDMUND KIRBY, LINUS PARKER,
S. B. ROBERTS, CALEB CARR,
JESSE ARMSTRONG, AVERY SKINNER,
HIRAM HUBBELL,

Commissioners of the Watertown and Rome Railroad.

Since the difference of level between Watertown and Pulaski is only 86 feet, in a distance of 32 miles, or little exceeding 2½ feet per mile, it has been suggested that a line of examination be carried from Watertown, west of the course we pursued, and bordering upon the Lake, maintain a grade nearly horizontal to Pulaski. My opportunities have not allowed an examination of this route, but in addition to its increased distance, I apprehend it will be found impracticable except at a great additional cost. The slight general attention I have devoted to that section induces a belief, that, although a line of a uniform and very moderate grade

might be located, yet that it can be effected only by crossing many long and deep ravines, and excavating the ridges between the streams, at a far greater expense than the route we have surveyed. However, an examination, directed especially to this object, might prevent a feasible course.

From Williamstown to Camden, by keeping west of the valley of Fish Creek, it is probable that a line may be found quite as favorable as the one followed down the valley. Much bridging, arising from the frequent sinuosities of the Creek, might thus be avoided, and as the valley is frequently overflowed by freshets, the security of the road would be better preserved, were a route further from the Creek to be discovered. Indeed I consider that there are many sections where a more favorable location could be found, but as these opinions were most generally the result of subsequent conviction, I had not an opportunity of subjecting them to the test of an instrumented investigation. While examining the estimates attention should be paid to this subject, since I feel confident that in the ultimate location of the road, I could make a material reduction in the cost per mile, and also considerably diminish, as well as equalize the grades.

When the survey was started at Watertown, it was judged advisable, if practicable, to admit no grade upon the line exceeding 33 feet per mile. I am happy to state that this has been accomplished, nor has it involved much addition of cost. This rate per mile once established as our maximum, I found that, by its occasional occurrence, considerable reduction of expense would result, particularly while approaching and leaving the points selected for our bridges. I have employed it more readily, since it is evident that a locomotive engine should never have attached heavier loads than it can convey with facility over the steepest grade that it may encounter, consequently there is but little policy in resorting to a heavy expenditure, to avoid a steep grade, upon one portion of your road, when necessity compels its use on other portions.

This consideration has induced me to establish the grades, wherever heavy cutting and embankment are requisite, at this maximum rate, but I am of opinion that more extensive examinations would show that our grades could all be reduced below 30 feet, and not cause an increase over the present estimate.

I would not advocate the use of steep grades where, by a reasonable additional expense, they could be avoided, yet I think it would be displaying great disregard to the recent improvement in railroad construction, and their appendages, were they not allowed some weight in determining the location of a Road. Companies, when ordering an Engine, always regulate their directions as to its capacity, by the grades it must ascend, and the amount of labor it is designed to perform. A grade of 40 feet per mile is very far from formidable, and by an Engine of proper construction, can be overcome with much speed, great ease, and conveying a heavy load.

Certainly the wonderful improvements in locomotive Engines daily originated, afford the most gratifying evidence that obstacles to Railroads no longer exist, since few loca-

tions can be selected in our country whose ascents cannot be surmounted by these constructions.

On the line of this road there is nothing objectionable in the grades, and it is a gratifying evidence of the feasibility of the route, that you will be subjected to no heavy expense to reduce the ground to a practicable level.

A consideration of the inducements, presented by this road, for the investment of funds, is not particularly a province of your Engineer, unless confided especially to his charge, further than to refer to the cheapness and facility with which the road can be constructed, the ease of its grades, and the efficiency and durability of its superstructure; but when I contemplate the immense extent of fertile country thus afforded a ready communication with the Erie Canal, and the great line of Central Railroads, when this work is beheld in reference to its contemplated extension to the River St. Lawrence, by means of the Cape Vincent Railroad, now surveying under my direction, thus opening a communication with Kingston, at all seasons, and thence to Lake Huron, shortening the distance to the far west six hundred miles, over the route by the lakes, which, in the most favorable season, is scarcely available over five months in the year, I am confident that its importance must strike every mind as great and commanding.

Uniting at some advisable point with the Oswego and Utica Railroad, connecting with a road to Syracuse, and thence south to the great New-York and Erie railroad, it thus opens a quick and almost direct communication with the city of New-York. It is clear that it must, in connection with the Oswego railroad, monopolize the trade and travel of the Canadas, and a large portion of the Lake travel to the west.

An examination of the map will show that the nearest approach to Lake Ontario, from the city of New-York, is at the mouth of Salmon River. Pulaski, a point through which our survey passed, is distant three and a half miles from the mouth of this river.*

Why may we not anticipate, in this age, when enterprise and well directed speculation seize hold of, and convert to some valuable purpose, every useful idea, that an immediate and almost direct means of communication, will be established between the city of New-York and the Lakes, and that this Railroad will constitute an important link in this chain.

Indeed, it demands only a knowledge of the great resources of this section of country, already to long neglected,—its fertile soil, its almost inexhaustible forests, its daily developing mineral wealth, and the remarkable salubrity of its climate, to convince reflecting men that it needs but an opportunity for development to take an equal rank among the most favored portions of our state.

SUPERSTRUCTURE: I have devoted much attention to the determination of the most

* The harbor is now improving under the direction of an U. S. Engineer, and the great inducements for profitable employment of capital at this locality are constantly attracting and enlisting the aid of men of wealth and enterprise.

advisable mode of superstructure for this road—a mode suited to the materials of the country,—facile of construction, and possessing all the requisites of cheapness, combined with great durability, I am aware of no reasonable objection that can be urged, against the method I have adopted, for the purpose of my estimate, and therefore offer it for the consideration of those to whom the erection of the road may be confided.

More than sixty miles of our line are in the vicinity of immense forests, composed principally of Pine, Spruce, Hemlock, Beech, Oak, Elm, Maple and white Cedar. Hundreds of acres are leveled annually to afford scope for the husbandman's industry, and the noblest timber is committed to the flames, since its seclusion from a market, renders it a worthless article; consequently, since any route for this road must involve many miles of dense forest, it is evident that it is unnecessary to bring upon the line a single stick of timber, provided that of a sufficiently good quality is produced on the ground.

The white Hemlock of this region is remarkable for its great strength, stiffness, and the ease with which it can be worked. It is known that Hemlock of a proper quality, if entirely protected from the action of the atmosphere, will endure for ages. Until lately a despised timber, its properties are now daily developing, and its application, for many useful purposes, becoming universal. Its qualities I have recently more especially examined from being interested in a contract, entered into by T. Dewey, Esq. Civil Engineer, with the corporation of the city of New-York, according to the terms of which, an immense quantity of Hemlock is employed as the substructure to support an expensive hydraulic construction of heavy masonry, used for draining wet lands, in the upper part of the city. Many valuable buildings in New-York are erected upon hemlock foundations. The new Hall of Justice, now rapidly constructing, is built entirely upon a double layer of hemlock logs. These facts exhibit the great confidence reposed in the durability and strength of this timber; and also show that were it possible so to place it that it would be protected from contact with the air, it would constitute the most durable superstructure that could be adopted.

Hemlock timber of the best quality, perfectly sound, of great height, and remarkable straightness, abounds upon our route. My estimate for superstructure is based upon a supposition that it is used.

Were it deemed advisable to use hemlock for the lower sills only, abundance of white Cedar, black Ash, and other good timber, could be found on the line for ties and rails.

Longitudinal sills of hemlock, 12 inches in diameter, hewn upon the upper surface, are laid to receive cross-ties, with gains cut 8 by 8 inches, of similar timber, which are also 12 inches in diameter, and hewn upon the under surface. The cross-ties are properly secured to the lower sills by oaken pins, one inch in diameter, and are placed four feet six inches apart from cen-

tre to centre. To these the hemlock rail 7 by 8½ inches is secured by oaken wedges. The surface of the rail is thus left half an inch above the gain, and upon it is laid a ribbon of black-Ash, 5 by 3 inches.

The iron rail being placed upon this ribbon, both are simultaneously fastened to the hemlock rail, by a wrought-iron spike, seven inches in length. The superstructure is then compactly covered with sand and gravel, excepting only the black-Ash ribbon, and the iron rail.

A road so formed would possess strength sufficient to support the weight of the heaviest engine that would be brought to bear upon it; and since all its material consists of timber that, in the particular position it occupies, is comparatively imperishable, its expense for repairs will be light when compared with structures of a less enduring nature.

Such is the energetic character of the present age, such the unanticipated extent to which skill and ingenuity have carried improvements in almost every department of science and of art, and such the utilitarian refinement attained in the various manipulations of construction, that fancy can hardly form a conception, or bold speculation anticipate a triumph over physical obstacles, greater than those the realization of which we daily behold.

The alterations made in locomotive engines are astounding in their character, and glorious in their results.

Steam has triumphed over every obstacle yet encountered—time and space are almost eradicated—and yet still it marches onward, from victory to victory, and none can indicate beyond what bound it shall not proceed. May we not be allowed to propose an idea, and anticipate, that the quick minds, and ready arms of our mechanics, will soon mould a vague conceit to a substance and a name?

Emulation is the spur to exertion which has so greatly improved our machinery and manufactured products. Present to the devising genius of our mechanics, inducement sufficient to call into action, their originaive faculties, and upon few specified objects will they fail to accomplish any desideratum.

Liberal encouragement and a fostering influence will command such qualities and ensure a beneficial result.

I would suggest to the directors of any company, whose line of road should be located through a wooded country, the propriety of offering a liberal recompense, to any mechanic, who shall furnish a locomotive engine, to be employed in the construction of their work, so formed that the motive power could be detached from the driving wheels, and applied to axles, fitted with circular saws, in such manner that the engine could be used for sawing timber.

A section of the road, a mile or two in extent, being graded, and superstructure laid, the engine could be placed upon it—the longitudinal sills and cross ties could be trimmed—the gains cut—the rails prepared of a proper dimension—the black-Ash ribbon formed—every material readily transported to and fro—and the road ex-

tended in both directions with facility and economy.

The details of arrangement will be evident to any mechanical mind—the fuel, always the great expense of an engine, would cost nothing—even the saving in the transportation of timber, cut upon the line, to some distant mill site, would be an important item, while the facilities afforded in the progress of the work would be immense.

A method of construction for embankments different from that usually employed, would be requisite—such a mode has been recently adopted in our State, and is much used at the West. By this method, the road can be graded, and at once completed ready for use.

Were a machine of this character invented, and found useful, it requires but little consideration to show that its advantages would be important. It is unnecessary to enter into any details of arrangement, but I would be happy, should this crude idea receive attention, to furnish every information.

From Watertown to Rome, with very few exceptions, the earth we shall cut for our excavations and embankments, consist of very light sand and gravel, easily removed, and forming an excellent foundation for a railroad. Near Watertown, limestone rock abounds, but as it will not interfere with our operations, we need not cut it excepting for culverts and abutments. Clayey soil occurs but occasionally. On the entire line the work is of a lighter character than is often found on similar improvements.

In estimating for culverts, I have supposed in some places, small ones for mere drainage formed of hemlock—while, where plenty of good stone is easily obtained, they are built of masonry.

When a wooden construction is substituted for embankments, I have estimated for a bridged trestle where it could readily be used, and in other places for bridges on Town's plan.

SECTION NO. 1.

Extends from a point one mile and a half from Watertown, near an old stone Distillery, on the road to Adams, to the South Bank of the North Branch of Big Sandy Creek, below Adams.

Distance 12 miles, 19 chains,
Add 1 “ 40 “ to starting point
[from Watertown.

13 miles 59 chains.	
Bridging and Trestling	\$7,920 00
412 chains Excavation	64,350
Cubic Yards	8,153 00
518 ch's. Embankment	156,517
Cubic Yards	18,402 04
Clearing and grubbing	303 00
Road crossings	210 00
7,448 rods of fencing	4,617 75
Culverts	2,000 00
Add for one mile and 40 chains	5,099 07
Contingencies, 10 per cent.	4,670 55
	<hr/>
	\$51,376 12

SECTION NO. 2.

Extends from the south bank of the north branch of Sandy Creek at Adams to the south bank of Little Sandy Creek, at Washingtonville.

Distance 11 miles 70 chains,	
Bridging and Trestling	\$14,470 50
395 ch's. Excavation	75,465
Cubic Yards	6,037 20
497 ch's. Embankment	79,501
Cubic Yards	7,155 09
Clearing and grubbing	462 00
Road crossings	100 00
7,136 Rods of fencing	4,424 32
Culverts	1,500 00
Contingencies, 10 per cent.	3,414 91
	\$37,564 02

SECTION NO. 3.

Extends from the south bank of Little Sandy Creek at Weshingtonville to Pineville.

Distance, 11 miles, 15.20 chains,	
Bridging and Trestling	\$3,702 00
350.60 chains Excavation	66,441
Cubic Yards	6,644 10
525 chains Embankment	96,594
Cubic Yards	9,659 40
Clearing and grubbing	304 00
Road crossings	100 00
7,006 Rods of fencing	4,343 72
Culverts	375 00
Contingencies	2,512 82
	\$27,641 04

SECTION NO. 4.

Extends from Pineville to the west branch of Fish Creek at the Williamstown Mills.

Distance, 11 miles, 4 chains	
Bridging and Trestling	\$1,584 00
346.50 ch's. Excavation	170,119
Cubic Yards	15,310 71
325.50 ch's. Embankment	111,-
226 Cubic Yards	10,019 34
Clearing and grubbing	2,064 80
Road crossings	75 00
6,976 Rods of fencing	4,325 12
Culverts	375 00
Contingencies	3,374 49
	\$37,119 46

SECTION NO. 5.

Extends from the west branch of Fish Creek near Williamstown Mills to the village of Camden.

Distance 9 miles 54.50 chains,	
Bridging and Trestling	\$10,494 00
206 chains Excavation	63,791
Cubic Yards	5,103 28
489 chains Embankment	77,810
Cubic Yards	6,224 80
Clearing and grubbing	891 00
Road crossings	225 00
5,560 Rods of fencing	3,447 20
Culverts	400 00
Contingencies	2,678 52
	\$29,463 80

SECTION NO. 6.

Extends from Camden village to Fish Creek Forks.

Distance 8 miles 34 chains,	
Bridging and Trestling	\$11,088 08
276 chains Excavation	89,469
Cubic Yards,	7,072 30
314 chains Embankment	78,582
Cubic Yards,	8,052 21
Clearing and grubbing	840 00
Road crossings	150 00

4,720 Rods of fencing	2,926 40
Culverts	600 00
Contingencies	3,072 89
	\$33,801 88

SECTION NO. 7.

Extends from Fish Creek Forks to the Arsenal at Rome

Distance, 10 miles 48.30 chains,	
Bridging and Trestling	\$8,462 50
366, chains Excavation	123,525
Cubic Yards	12,352 00
276 chains Embankment	42,230
Cubic Yards	3,800 70
Clearing and grubbing	1,560 00
Road crossings	125 00
6,152 Rods of fencing	2,814 24
Culverts	250 00
Contingencies	3,036 44
	\$33,400 88

PINEVILLE ROUTE.

Extends from the south side of Little Sandy Creek, one half mile east of Washingtonville to Pineville.

Distance 8 miles 26 chains,	
Bridging and Trestling	\$9,768 00
363, chains Excavation	88,866
Cubic Yards	7,109 28
245, chains Embankment	75,710
Cubic Yards	6,056 80
Clearing and grubbing	828 00
4,864 Rods of fencing	3,015 68
Contingencies	2,677 77
	\$29,455 53

ESTIMATE FOR SUPERSTRUCTURE.

10,560 feet Longitudinal sills of hemlock 12 by 12 inches hewn, at 50 cts. per 100 feet	\$52 80
1,173 Cross-ties of hemlock 12 by 12 inches hewn, at 50 cts. per 100 feet	46 92
Sawing and cutting gains for cross-ties	70 38
10,560 feet Hemlock rail 7 by 8½ inches at \$4 per 1000	209 44
2,112 Oak wedges at \$9 per 1000	19 00
2,112 Oak pins 1 inch diameter, at \$5 per 1000	10 56
17,560 feet Black Ash ribbon, 5 by 3 inches, at \$5 per 1000	66 00
25 Tons of Iron-Rail 2½ by 3 inches at \$75 per ton	1,875 00
1,877 lbs. wrought iron spikes, 7 inches, at 11 cts.	206 47
750 Splicing plates, 1,134 lbs. at 5 cts.	56 70
Labor of putting down a mile	576 93
Total per mile	\$3,190 20

SUMMARY OF COST.

SECTION NO. 1. 13 miles 59 ch's.	\$51,476 12
" " 2. 11 " 70 "	37,564 02
" " 3. 11 " 15.20chs.	27,641 04
" " 4. 11 " 4 ch's.	37,119 46
" " 5. 9 " 54.50chs.	29,463 80
" " 6. 8 " 34 "	33,801 88
" " 7. 10 " 48.30 "	33,400 88
76 " 45.00 "	\$250,367 20

Average per mile. \$3,270 09	
Superstructure	3,190 20
Total per mile	6,460 29
76 miles 45 chains at \$6,460 29	
per mile	\$494,615 95
9 turn outs	18,000 00
Total	\$512,615 95

I have not introduced any items referring to the expense of station houses and other appendages, since they are subject to ready calculation, and must be regulated by the business of the road, and the judgment of the Directors.

All my calculations are based upon a liberal scale, and, should the ideas I entertain, be followed in the execution of the work I have entire confidence that the result will indicate an essential reduction in the sum estimated.

I have the honor, Gentlemen, of presenting this Report and estimates, with the accompanying Profiles, and remain, Yours, very Respectfully,

WILLIAM DEWEY.
Civil Engineer.

Pulaski, September, 1836.

RAILROAD MEETING.

"The citizens of Butler county held a meeting at the court house in Butler, on the evening of the 18th inst., for the purpose of consulting on measures to carry into effect the contemplated Railroad from Freeport through Butler to New-Castle. Hon. John Gilmore was called to preside, assisted by Jacob Mechling, and W. Campbell, Esq., and Wm. Stewart and James Potts were appointed Secretaries.

The following resolution offered, by Wm. Beatty, Esq., after a spirited discussion, in which several gentlemen participated, was unanimously adopted:—

Resolved, That a committee of seven be appointed to draft a Memorial to the Legislature of this State for an appropriation to construct a Railroad from Freeport by the way of Butler to New-Castle—and that the same be considered as a part of the Pennsylvania improvements.

Wm. Beatty, Wm. Stewart, S. A. Purviance, C. C. Sullivan, John Gilmore, John Bredin, and Joseph Graham were appointed said committee—and it was ordered that said committee have the Memorial printed, and circulated to obtain signatures.

On motion, C. C. Sullivan, J. N. Purviance, W. Beatty, Jacob Mechling, and W. Campbell were appointed a committee of correspondence.

Resolved, That F. M'Bride, J. Potts, M. Bredin, A. Gilmore, and J. G. Campbell be a committee to procure a lithographic draft of the contemplated improvement, and the adjacent improvements and country around; and that they be also a committee of finance.

Resolved, That the proceedings be signed by the officers and published."

JOHN GILMORE, President.

JACOB MECHLING, } Vice Pres.

WM. CAMPBELL, }

Wm. Stewart, } Secretaries.
James Potts, }

RAILROAD MEETING.

In pursuance of a public notice given, a meeting was held at the Court House in the town of Benton, on Monday, the 7th day of Nov., 1836, to take into consideration the construction of a Railroad from the city of Jefferson, passing through the mineral region in Washington county, and terminating at some point on the Mississippi river in South Missouri.

And also the propriety of appointing delegates to represent this county in a Southern Convention to be held at the town of Jackson on the 2d Monday of November. Whereupon, the meeting was organized by calling Joseph Hunter, Esq., to the chair, and appointing Col. Felix G. Allen, Secretary.

The President having explained the object of the meeting, Dr. Brown offered the following resolution, which was read and adopted:

Resolved, That we esteem the construction of a Railroad from some point on the Mississippi below its conflux with the waters of the Ohio, passing through the mining region in this State, and terminating at some eligible site on the Missouri River, as a work wholly practicable, of infinite advantage to Southern Missouri generally, and inestimable importance to us, therefore,

Resolved, That we will send delegates to the contemplated Railroad Convention, to co-operate with that body in memorializing the Legislature on the subject of constructing a Railroad, as nearly in accordance with the views of this meeting as may be practicable.

Dr. Brown then moved that ten delegates be appointed to represent this county in the proposed convention, which motion prevailed, and thereupon,

Richard C. Woolfolk, Esq., moved that the President appoint said delegates, which motion passed in the affirmative, and the chair accordingly selected the following gentlemen:

John Hall, Felix F. Allen, William Myers, John Moore, Dr. Brown, Underwood Beckwith, Drakeford Gray, John R. Dunklin, Richard C. Woolfolk, and on motion by Dr. Brown, the chair was added to the number of the delegates.

On motion by John Moore, Esq., the following resolution was considered and adopted.

Resolved, That the proceedings of this meeting be signed by the Chairman and Secretary, and copies thereof be forwarded to the editors of newspapers in the town of Cape Girardeau, with a request to publish the same—and then,

On motion of R. C. Woolfolk, Esq., the meeting adjourned.

JOSEPH HUNTER, President.

FELIX G. ALLEN, Secretary.

ANOTHER RAILROAD MEETING.

In pursuance of public notice, a large and respectable meeting of the citizens of New-Madrid county was held in Big Prairie, on Monday the 7th Nov., to take into consideration the propriety of sending Delegates to represent this county in the Southern Railroad Convention, to be held in the town of Jackson, on the second Monday of November.

The meeting was organized by calling David Hunter, Esq., to the chair, and appointing Morgan Hill, Secretary.

The object of the meeting having been briefly stated by the chairman, Mr. Charles Emory submitted the following resolutions, which were unanimously adopted:

Resolved, (as the sense of this meeting) That we deem the construction of a Railroad, from some point on the Mississippi, below the mouth of the Ohio, running through the mineral region of this State, and terminating at some suitable place on the Missouri River as a work in every respect practicable, and one in which every citizen in Southern Missouri is deeply interested: Therefore,

Resolved, That we will send Delegates to represent this county in the Southern Railroad Convention to be held in Jackson, on the second Monday in this month.

On motion, by Mr. Graham, it was agreed that the chair nominate a committee of five, to appoint Delegates to represent this county in said Convention, and therefore, the chairman nominated said committee, which, after having retired a few minutes, returned the following gentlemen, as having been selected Delegates to represent said county in said Convention.

Needham Sike, Lemuel Maulsby, Morgan Hill, Richard Philips, Charles Seavers, Robert G. Watson, John B. Martin, Martin Toney, John Martin, Alfred Dillard, William W. Hunter, H. P. Maulsby, Asael Smith,—and, on motion by Mr. Russell, the chairman was added to the number.

Mr. Sikes offered the following resolution.

Resolved, That these proceedings be signed by the Chairman and Secretary, and copies thereof be forwarded to the editors of the Southern Advocate, with a request to publish the same.

Which was agreed to.

On motion by Mr. McFarland, the meeting adjourned.

DAVID HUNTER, Chairman.

MORGAN HILL, Secretary.

DETROIT AND ST. JOSEPH'S RAILROAD.

The Directors have secured the services of Lieut. Centre and Berrien, two of the best practical Engineers in the United States; who have resigned their offices in the army for the purpose of devoting their entire attention to the work.

The road is grubbed as far as Ypsilanti, and ten miles are graded. As a proof of the interest taken in the work, it may be stated that the Directors meet regularly every Friday evening.

MONROEVILLE AND SANDUSKY CITY RAILROAD.—At the annual election, held by the stockholders of this road, at the Railroad Hotel, in Monroeville, on the 17th October.

John G. Camp, Thomas Neill, George Hollister, Forrest Messenger, James Hollister, Jr., Durin H. Tuttle, John Fish, James Hollister, and Henry W. Standart, were unanimously elected directors for the ensuing year.

At a subsequent meeting of the Board, Isaac A. Mills was unanimously elected

President; George Hollister, Treasurer; and Edward Baker, Secretary.—[Huron Reflector.]

WATERTOWN AND CAPE VINCENT RAILROAD.

The survey and estimates for this road are completed, and the result submitted to the public in the report of the engineer Mr. Dewey. The report estimates the cost of constructing the road, at \$145,965 88 or \$5,781.96 per mile. The distance is about 25 miles. This road when constructed is to unite with the Rome and Watertown Road at the latter place, and thus give a continuous route of about 100 miles through a delightful and richly cultivated country.

RAIL PATHS.—Manufacturers, merchants

and mechanics seem not to be aware of the ease and advantage, with which a heavy load may be moved on rail paths for short distances by human power. The man, who draws up a weight of one pound ten feet perpendicularly, exerts the power that would move two hundred and forty pounds ten feet on a level railroad; or, which is the same thing, the power that raises up on one pound, or one ton a foot perpendicularly would move that pound, or that ton two hundred and forty feet on a level railroad; and thus the power, that raises a ton eleven feet, would move it forward on a level railroad half a mile. FARRADY, a writer on the steam engine, says that a stout laborer will work for eight hours a day, expending the strength required to raise 3750 pounds one foot each minute. Such a laborer then may move in a day on a level railroad eighty-one tons of 2000 pounds each half a mile, including the weight of the carriage and the load. It is manifest, therefore, that rail tracks might be used for the great accommodation and profit of manufacturers, merchants and mechanics, and I may add of farmers too. Indeed by a level rail path, a gentleman might move double his own weight half a mile, as easily as he would walk up a pair of stairs twenty-two feet high.—[Yankee Farmer.]

AMERICAN LOCOMOTIVE IN GERMANY.

—The Baltimore American states that an application has been made on the part of the Leipsic and Dresden Railroad Company, in Saxony, to the Baltimore and Ohio Railroad Company, for permission to Messrs. Wynans and Gullingham, by whom the engine factory of that corporation is conducted, to make an engine for the company first named, similar to those used on the great western work of Maryland, to be placed on the road between the German cities above mentioned. The application was occasioned by the report of the performances of an engine at the inclined planes, published some months since, under the sanction of the Directors, which report had been re-published in the German papers, and created quite a sensation. The results stated far surpassed any thing which had been deemed practicable even among the highly celebrated mechanics in Germany.

RAILROAD FROM HOBOKEN TO AMBOY.
—At a public meeting in Perth Amboy, James Harriot, Chairman, and James A. Nichols, Secretary, the following resolutions were adopted, viz:

1. Resolved, That we consider the intended Railroad, to be called the People's Railroad, of great importance to our city, and a large portion of the interior of this State, opening a communication from some of our principal manufacturing towns to this port, thereby securing to them a great facility for shipment of their goods intended for abroad, at all seasons of the year, in vessels of any class; and receiving of articles from abroad, for the supply of manufactures and consumption, without the expense of re-shipment.

2. Resolved, That we will co-operate with the citizens of the neighboring towns in obtaining the passage of the Bill for said road.

THE NEW DOLLAR. It gives us pleasure to announce—says the Washington Globe of this morning—that the dollar of our own mint is soon to make its appearance. The face of the coin represents a full length figure of Liberty, seated on a rock, with the classic emblem of the *pileus* or liberty-cap surmounting a spear held in the left hand. The right hand rests on the American shield, with its thirteen stripes, crossed by a scroll, on which is the word Liberty. The reverse represents the American eagle, on the wing, drawn accurately from nature; all the heraldic appendages of the old coin being discarded. Over the field are placed irregularly twenty-six stars; the entrance of Michigan into the Union, having been, it seems, anticipated.

The design of the face of the coin was drawn by Mr. Sully, and that of the reverse by Mr. Titian Peale; both under instructions from the Director of the Mint. The dies were executed by Mr. Gobrecht, one of the engravers of the mint.

This emission of dollars is the first coined at the mint since the year 1805. It is intended to adopt the same design in the other coins, as soon as it is practicable to do so. [Balt. Am.]

It has been ascertained at Northampton, (Mass.) that good brown sugar can be made from beets in this country, so as to be afforded at 5 and 6 cents the lb.

DESCRIPTION OF THE NEW COINING PRESSES LATELY INTRODUCED INTO THE UNITED STATES MINT, PHILADELPHIA. BY FRANKLIN PEALE, ESQ.

TO THE COMMITTEE ON PUBLICATIONS.

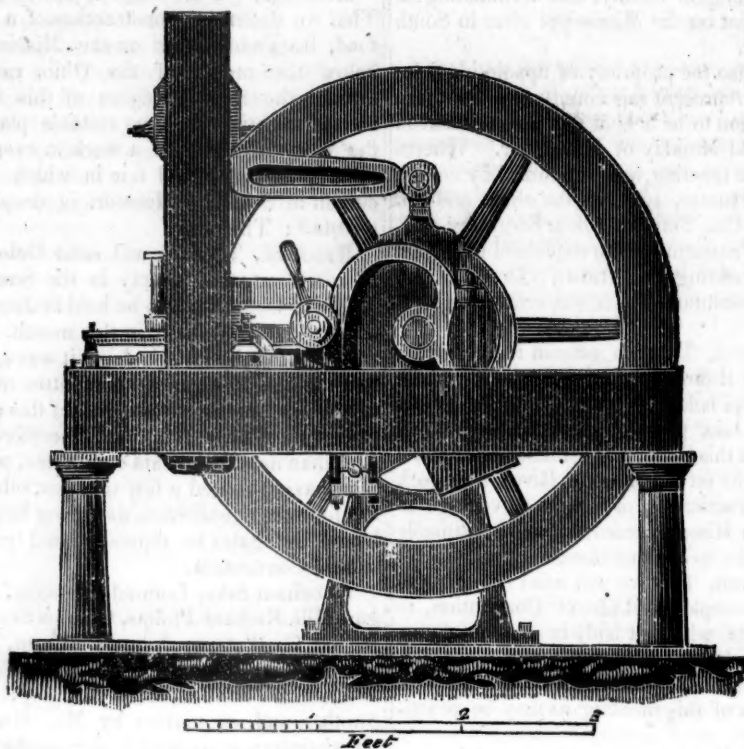
GENTLEMEN:—After seven months of experience, it will not be considered premature, to send for publication, a brief notice of the Coining press, a model of which I had the pleasure to exhibit and describe, at one of the conversation Meetings at the Institute last year.

This press has been in operation since the 23d of March last, the period of the first coinage by steam in the Mint of the

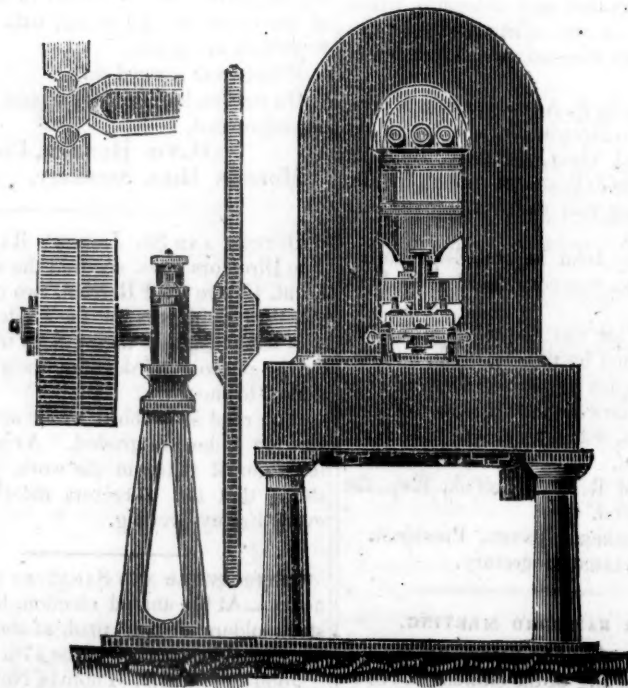
United States; and the results, which are more than satisfactory, have authorized us to proceed with the most perfect confidence in the formation of the presses for the Branch Mints at New-Orleans, and at

Charlotte and Dahlonega, in North Carolina and Georgia; also, with the manufacture of others for the use of this mint, all of which, it is probable, will be completed at an early period in the coming year.

Side View of the Press.



Front View.



The above design exhibits a side view of the medium size press, intended to strike eagles, quarter dollars, and cents. Three grades have been adopted, corresponding in linear proportions to the numbers 9 $\frac{1}{2}$,

7 and 6, suited to all the denominations of our coin respectively.

The design exhibits the general proportions and arrangements of parts, consisting of a shaft with a fast and loose pulley

to receive motion by means of a strap from the moving power, whether water, steam, horse or hand:—the latter of course, being least desirable, will only be used, when neither of the others is available. Upon this shaft is placed the fly wheel, the momentum of which, during one revolution at the rate of sixty per minute, is found, on trial, to be quite sufficient to overcome the resistance offered by the piece whilst subjected to the pressure of the dies. Upon the same shaft is the crank, which gives motion, through the pitman, to a lever and toggle-joint, the structure of which is exhibited in the left upper corner of the front view presented in the next figure.

The feeding in of the blanks, or planchets, and their discharge after being struck, is performed by an eccentric and set of levers, all combined in so simple a manner, as to be effectual, and not subject to derangement; as much of these parts as are visible in the two views, are faithfully exhibited, but is impossible to describe them intelligibly without the aid of drawings of the separate parts; and further, since the drawings were executed, changes have been made in the position and form of the eccentric, by which the press has been much improved; a general notice is all that is intended in the present communication.

The feeding tube is a vertical pipe to receive the blanks, in which they are placed by hand, and from which they are taken by the feeders; the latter are so arranged, that when a crooked, or otherwise faulty blank impedes the motion, (not an unfrequent occurrence in coining,) the whole is immediately released from action, and will not again operate until the impediment be removed.

A few familiar facts are added as evidences of the peculiar adaptation of the toggle-joint to coining, as proved by the operation of the press which is the subject of this notice.

1. The pressure acts with increasing force until the close of the operation, at which time its intensity is greatest, and it is always carried to the same extent.

2. No injury occurs from the absence of a blank from between the dies when the blow is given, an accident that results in the destruction, or great injury, to one, if not both, of the dies, in presses of the ordinary construction.

3. An immense saving of labor. From trial, we have ascertained, that a man, with one hand applied by means of a common winch handle, can coin eighty pieces per minute, (the experiment was tried upon cents, which have a diameter of $1\frac{1}{8}$ inches.) A boy, fourteen years of age, was able to coin sixty per minute, without any unusual exertion; and lastly, it was impossible for the operator to tell, by the resistance offered to his exertions, whether the pieces were being coined or not.

It is by no means my wish to be considered the first who has applied the toggle-joint to the striking of coin. It is difficult to say to whom priority belongs; for presses on similar principles, are in use in more than one city of Germany, and their successful operation was witnessed at Carlsruhe, in

the Grand Duchy of Baden. Particular advantage has also been derived from a careful examination of the coining presses of Monsieur Thonnelier of Paris. It is just to observe, that none of these presses were perfectly satisfactory. I have, therefore, made my own distribution and proportion of parts, thrown off whatever was complex, and added such as were necessary to its perfection, particularly, the arrangement for the disengagement of the feeders in case of the presence of defective pieces.

Our esteemed friend and fellow citizen, Mr. M. W. Baldwin, several years since, commenced the construction of a press on similar principles. His talents and mechanical skill are amply sufficient for its completion; and it is to be regretted, therefore, that his numerous occupations have prevented his prosecution of the subject.

I take advantage of the present occasion, to make a few remarks on the application of steam power to coining, as applied in the Royal Mint, on Tower-hill, London, which is one of the greatest curiosities in mechanics that I have seen, exhibiting consummate skill and great resources, on the part of the inventor, who, if I am not misinformed, was Mr. Boulton of Soho works. For a series of years this machinery was kept rigidly secret; some even of the officers of the Mint not having the favor of seeing it accorded to them, and it might yet have remained so, if it were not for the advancement of liberal principles, which bid fair to keep pace with the rapid increase of mechanical ingenuity and skill.

The direct application of high steam to the screw press, would have answered every purpose, but still better, the substitution of the toggle-joint for the screw has rendered all this ingenious complexity unnecessary; but mechanicians may make their own inferences from the following sketch.

A low pressure engine, is employed to create a vacuum in a large receiver, (in this case a misnomer,) by means of an air pump, which serves as a reservoir of power, through the agency of which the pressure of the atmosphere, is exerted as occasion requires both for the *blow* and *recoil* of the screw press, the former, produced by a cylinder and piston, furnished with valves, one of which opens to the reservoir, and the other to the external air, the latter by a cylinder and piston, constantly acting, but with less power than the former. The valves are moved by levers which are struck at the proper time by a *plug frame* of similar construction to those employed in the ancient atmospheric engine. The power is communicated to the screw by tumbling shafts, connecting rods, and levers, the construction and operation of which could not be rendered intelligible without full drawings for reference. More words would, perhaps, render this brief notice as mysterious as the contrivance of which it treats; I will, therefore, close, by adding that eight of these systems, attached to eight screw presses, constitute the coining power of the British Mint.

From the New-Orleans Standard.

CLIMATE OF NEW-ORLEANS.

It may now be admitted, as fairly proved by sage philosophers, that the climate and

health of a place depend as much on its locality as on its latitude in a particular zone or hemisphere; and that as the locality is improved by the arts of civilized life, the climate and health are proportionately meliorated. This is evinced by the experience of all ages and nations; and fortunately the experience of New-Orleans must shortly add another proof to corroborate the truth of this result.

The editor has occasionally recurred to this subject, in the humble hope of disabusing public opinion at a distance, founded on idle or interested rumors of the unhealthiness of this city; and as this opinion has been one of the greatest obstacles to the greater population and trade of New-Orleans, he need not apologize for again adverting to it, and of acquiring the most authentic details to support his positions. He has obtained a general average for the past three years, ending the 1st of August last, of the state of the thermometer, barometer, hygrometer, weather, winds and rivers, as diligently and carefully prepared by Dr. BARTON, from personal observations made with the best instruments at all periods. The following are extracts from the table elaborated.

THERMOMETER.

	Highest	lowest	monthly mean	range
January	72	28.66	53.54	43.33
February	72.66	49.66	51.42	46
March	75.66	46	59.02	29.66
April	80	54	66.75	26.66
May	86	60	75.58	26
June	89	72	79.74	17
July	88.66	73	80.06	15.67
August	89	73	80.16	16
September	83.66	64.66	77.22	19
October	82	47.16	68.55	35.50
November	77.33	34	59.64	43.33
December	71	35.33	54.97	35.67
			67.22	29.48

BAROMETER.

	Highest	lowest	range
January	30.23	29.70	.53
February	30.20	29.75	.44
March	30.23	29.82	.47
April	30.17	29.76	.41
May	30.17	29.85	.37
June	30.14	29.88	.27
July	30.14	29.95	.19
August	30.02	29.78	.24
September	30.07	29.74	.22
October	30.19	29.83	.37
November	30.31	29.69	.58
December	30.20	29.79	.41
			.40

HYGROMETER OF SAUSSURE.

	Highest	lowest	mean	range
January	43.50	0	19.50	43
February	40	0	31	28
March	40.50	0	18.87	40
April	16.33	17.66	42.25	43
May	61.66	14	45.78	47
June	66.66	23.33	48.65	40
July	52	0	36.54	52
August	56	5	40	51
September	65	26	46	39
October	61.50	1	40	66
November	52.50	0	29	52
December	48	0	21	48

ASPECT OF THE WEATHER.

	clear	cloudy	rainy
January	43.66	34.33	13.33
February	51.33	14.44	8.33
March	45.33	36.66	10.66
April	54	23	12.33
May	69	18	8
June	59.33	17.33	11.66
July	51.33	22	15
August	51.39	18.70	11.76
September	56.73	11.83	10.83
October	66.43	12.70	3
November	57.73	43.86	7
December	50.73	23.30	6.80

The average quantity of rain in January of the three years, was 4.66; in February 2.25; in March 2.59; in April 6.21; in May 2.95; in June 6.16; in July 6.38; in August 5.72; in September 5.66; in October 1.37; in November 3.18; and in December 2.87: from which it will be seen that more rain falls in April, June, July and August, than in other months; and that October and February are the driest months in the year.

During the same three years, from 1st August 1833 to 1st August 1836, the average retrocession of the Mississippi River from high water mark was 7.90 feet in January, 5.13 in February, 4.27 in March, 2.94 in April, 4.63 in May, 4.72 in June, 5.82 in July, 7.97 in August, 13.10 in September, 13.33 in October, 12.34 in November and 8.84 in December—the river being highest in April and lowest in October. Dr. Barton has found that the Mississippi deposits 1 line of earthy particles in every 10 inches of water: that is one foot alluvion in 120 feet water. It might be useful as well as curious to ascertain when the river makes the most deposits; and what impetus or power is necessary to remove deposits or obstructions occasionally or continuously applied. The solution of this might be of great advantage in improving the navigation of the river at its mouth.

But as a mere abstract view of a subject does not always give a positive idea, let us ascertain the climate of New-Orleans as compared with that of some principal cities; by showing the latitude; the distribution of heat in the different seasons, according to the mean temperature; and the maximum temperature of the warmest month with the minimum of the coldest. The statements of other cities are taken from Ure's Dictionary of Chemistry, those of this city from Dr. Barton's table.

	Latitude	Mean temp. of year	Do of winter	Do of spring	Do of summer	Do of fall	Do of warmest month	Do of coldest
Edinburgh	55.37	47.8	38.6	46.4	58.2	48.4	59.4	38.3
Dublin	53.21	49.2	39.2	47.3	59.6	50	61	35.4
Geneva	46.12	49.3	34.9	47.6	65	50	66.6	34.2
Vienna	48.19	50.6	32.8	51.2	69.2	50.6	70.6	26.6
Paris	48.50	51	38.6	49.2	64.6	51.4	65.3	36
London	51.30	50.4	39.6	48.6	53.2	50.2	64.4	37.8
Philad'a.	39.56	53.4	32.2	51.1	74	56.6	77	32.7
New-York	40.40	53.8	29.8	51.2	79.2	54.6	80.6	25.4
Cincinnati	39.06	53.8	32.9	54.4	72.8	54.4	74.3	30.2
Marseilles	43.17	59	45.5	67.6	72.5	60	74.6	44.4
Rome	41.53	60.4	45.8	57.8	73.2	62.8	77	42.2
Natchez	31.29	64.8	48.6	65.4	79.2	65.8	79.7	47
Cairo	30.02	72.4	53.4	73.6	85.1	70.5	85.8	55.8
N. Orleans	30	67.2	52.31	67.1	80	68.4	80	54.4
Vera Cruz	19.11	77.8	72	77.9	81.5	78.6	81.5	71
Havana	23.10	78.2	71.2	79	83.3	79	84	70

It may be remarked that these observations on the climate of New-Orleans, include part of 1833, when there was an epidemic, and the extremes of temperature were unusually great; and that the winters '33-'34 and '34-'35 were remarkably cold in this city. And it will be perceived that though the average range of temperature in New-Orleans throughout three years of that kind, was not 30 degrees, the range in Philadelphia, New-York, Cincinnati, Natchez and even Rome was much greater: also that the extremes of heat and cold in New-Orleans are proportioned to those in Paris and Marseilles; and consequently the health of this city, so far as it depends on climates is or can be as good as the health of Marseilles or Paris. *Quod erat Demonstrandum.*

Agriculture, &c.

From the Farmer's Register.

ACCOUNT OF THE LATE ROBERT BARCLAY, ESQ. OF URY, A CELEBRATED AGRICULTURIST.

Extracted from Mr. Robertson's Agricultural Survey of Kincardineshire.

But the man who exerted himself most for the improvement of the country; the man whose labors in agriculture were the most strenuous and well conducted; and whose example had the most prevalent and most extensive influence, was the late Mr. Barclay of Ury. His, indeed, were no common powers. Of the most athletic form of body, endowed with the most ardent, energetic, and comprehensive mind, he employed his great talents as an agriculturist with the most unwearied perseverance, and to the happiest and most beneficial results. The subject which he had to work upon and to improve, or rather to subdue, was of the most obdurate nature, and to most people would have been unconquerable. But he was not of a nature to be intimidated. Difficulties tended only to excite his activity; and, adhering tenaciously to his own preconceived and well adjusted plans, he was ultimately successful.

The estate of Ury, the chief subject of his improvements, lies on both sides of the water of Cowie, and extends from Stonehaven, in a northwesterly direction, for nearly five miles. The house of Ury is situated about a mile and a half from Stonehaven, on the north banks of the Cowie. This rivulet, whose banks have been destined to receive so much embellishment from the hands of Mr. Barclay, is a small troutling stream, in general of no great capacity; but there are times when the mountain torrents, from which it is derived, come down so suddenly, and with so much impetuosity, as to swell it, in some places, more than twelve feet above its usual level. Happily, however, at Ury house, where this occurs, it is confined within strong natural bulwarks of rock, so as to prevent devastation.

Mr. Barclay succeeded his father to this estate, in the year 1760. At that time there was, except a few old trees around the mansion house, scarcely a single shrub of any value on the whole property. The Cowie, which runs for above three miles

through the lands of Ury, had, in the lapse of ages, worn itself a deep channel; the land on either hand shelving towards it, in an angle more or less acute, in proportion as the soil was more or less adhesive. In general, through the whole extent of this course, springs of water from the circumjacent grounds were continually oozing to the banks, and forming into marshes and quagmires, which from time to time burst, and were precipitated, by land slips, into the river. Thus, every year the banks were becoming wider, by the breaking down from the overhanging braes of some new piece of land, to be slipped, in its turn, into the stream, which, being periodically flooded, swept the whole into the sea. The only product of these banks was a few natural alders, of no value whatever, and a coarse kind of aquatic herbage, to which cattle had hardly any access, and on which, if they had, they would scarcely have fed.

The arable land was divided into a number of small farms, each having a right of pasturage on the contiguous hills. The tillage was superficially performed with very imperfect implements. Almost every field was incumbered with obstructions of one kind or other—such as, pools of stagnant water—quagmires, where the cattle were ever in danger of losing their lives—great baulks of unploughed land between the ridges—but, above all, stones abounded, not merely on the surface, but through the whole depth of the soil. There were no enclosures; no lime was used as a manure; and the only crops were bear and oats. There was no cart nor wheel-carriage of any kind; nor was there even a road. In short, no place at that time abounded more in the evils attending the ancient system, nor enjoyed fewer of the advantages of modern husbandry, than the lands of Ury.

Mr. Barclay, who had acquired his ideas of agriculture on the fertile plains of Norfolk, could ill brook a state of husbandry like this. So soon, therefore, as he succeeded to the estate, he set, about its improvement in a style which soon appeared to be neither superficial nor fleeting, but, to the utmost degree, radical and permanent. For this purpose, in addition to the lands that were at all times in the hands of the family, he took into his own management all the farms in the vicinity of the mansion, as the leases expired. And as none of them were of long endurance, he had, in the course of about 30 years improved most thoroughly 903 acres of arable land, besides planting from 900 to 1000 acres with wood. Of the above quantity of arable land, there were originally about 300 acres, which were altogether either marsh or heath. Of the remaining 600, which were let to tenants, about one-fourth part, or 150 acres, consisted of baulks, wastes, marshes, and pools, interspersed through every field; the quantity in actual tillage never having exceeded 450 acres. So that, on the whole, Mr. Barclay, has meliorated about 450 acres, and brought them, from a very imperfect, to the most correct state of culture; and improved, from a state originally of the

most barren and forbidding appearance, about 450 acres more, which are now in a high degree of fertility.

The means by which all this has been accomplished, will form the subject of the following investigation, and fall to be related under these different heads. 1. Draining. 2. Trench-ploughing. 3. Removal and disposal of stones. 4. Application of lime. 5. Enclosing. And, 6. Rotation of crops. Plantations will form the subject of a separate section; as will comparative value, another.

1. *Draining*.—This primary step towards improvement was so indispensable on the lands of Ury, that out of 52 fields, into which Mr. Barclay divided his improved lands, there was only one in which draining was not required. The sub-soil of nearly the whole was also of such an adhesive nature, that the spring water could not filter through, nor draw to any considerable distance. So much was this the case, that it was frequently requisite to form the ditches within a few yards of each other, before the purpose of complete drainage could be accomplished. One field, consisting of 25 English acres, is, in particular, still pointed out as a remarkable instance of this. It cost £150 for merely the opening of the ditches, though these were contracted for at the low rate of three farthings the ell. This gives 48,000 ells for the field, or 1920 for the acre. And if we suppose the ditches to have been two and a half feet wide, (and, in such a marshy soil, less would not have kept them from falling in,) the ground thus cast up would amount to more than one-third part of the whole mass; and the drains must have been, at the average, within less than five feet of each other. To this expense of opening or casting the drains, there falls to be added, the expense of filling with stones and covering again with earth. The filling with stones, at the rate of one cartload to three ells, would require 16,000 such loads; a large part of which, if not the whole, must have been brought from a considerable distance, as it is more than probable the marsh could not, of itself, furnish such a quantity. This labor, together with the expense of laying the stones in the ditches, and covering them with earth, cannot, on the most moderate estimate, be calculated at less than double the first expense, or £450 for the whole; thus making more than at the rate of £20 the acre for draining alone. The field itself, having been thus so completely turned inside out, has altered its aspect from its originally mossy hue, to a dale white, the color of the clayey sub-soil; which having been thoroughly pulverized by trench-ploughing, and a copious application of lime, is now, not merely fully dry, but become considerably fertile. The total expense laid out on this field, would be little short of £40 the acre; for independent of drainage, Mr. Barclay's other means of improvement generally cost him, per acre, about £18. This expense, in the present instance, would probably do more than purchase the land after it has been improved, and would certainly have deterred any common cultivator from making

the attempt. But Mr. Barclay was not a man to be easily moved from his purpose; and, having once resolved to bring his whole lands into a full state of cultivation, this field, which would otherwise have remained a blot on the surface, would not have been left unimproved although it should have cost ten times the sum.

Mr. Barclay's drains were generally two feet and a half wide at top, ten inches wide at bottom, and about three feet deep. Less dimensions as to breadth might perhaps have served every purpose of draining; but the expense of casting them would have been very little, if at all, diminished by narrower ditches. For in a soil, of which one half the substance consists of stones and gravel, and the other half of an adhesive clay intermixed with these, it becomes impracticable to cast a very narrow ditch. To this it may be added that as the lands of Ury had such a profusion of stones on the surface, it became a relief, in the trouble of clearing them away, to have large ditches into which they might be put.

2. *Trench-ploughing*.—The next operation was trench-ploughing; and there were two objects in view from this labor; 1. To acquire a depth of soil; and, next, to get rid of stones: and the work was persevered in till both were accomplished. Previous to Mr. Barclay's operations, the quantity of stones upon the lands of Ury was, as has been already stated, immense, both on the surface and through the whole depth which the plough had ever reached. The tillage had been but superficially performed; nor, indeed, had the tenants either skill or ability to perform it better. But Mr. Barclay soon made his lands assume a different appearance; and from being the most incumbered with stones, and from having the thinnest staple of soil, they became the least incumbered, and of the deepest soil in the county. This was not, however, an easy acquisition, nor was it accomplished at little cost. With a set of uncommonly strong implements, and with six, and sometimes eight, heavy horses in the draught, he made the plough to descend, in spite of every obstruction, sixteen or eighteen inches at once; and, after carrying off the stones, as they were turned up, as from a quarry, he repeated the operation, till, in the end, he obtained a free soil of fourteen inches deep, and of a mould fit for every agricultural purpose. The quantity of stones thus removed was in general very great, and in some cases, almost incredible—even to the amount of more than a thousand cart loads from an acre. And the surface of the land itself was observed to have become evidently ten or twelve inches lower by the operation.

3. *Disposal of the Stones*.—This would have been a work of weary labor, had not Mr. Barclay found out beneficial purposes for almost the whole. The draining, already noticed, consumed them in myriads. Perhaps more than 100,000 cart-loads or 100,000 tons weight, were thus disposed of. On this point, however, one can speak only from probable conjecture; for, of such a multifarious distribution, no account was

ever attempted to be kept. But, judging merely from the vast extent of drains that were made in progress of this branch of improvement, over nearly 900 acres, and which certainly amounted to several hundred thousand ells, the quantity of stones requisite to fill these could not be less than as now stated, but was probable much greater.

It has been already remarked, that when Mr. Barclay succeeded to the estate, there was not a road on it. But as he clearly perceived that well made roads, so essential to all improvement, were indispensably required at Ury, so he set about the construction of them without delay, and was assisted in this useful work by the statute-labor of that district of the county. The length of road altogether, that was thus made through his lands, with all its ramifications, extends to about eight miles, and consumed, to good purpose, many thousand cart-loads of stones.

He had another expedient still, namely, the filling up of hollows and pools. This is a branch of improvement that does not fall in the way of every cultivator; but Mr. Barclay had it in abundance. The inequality in the surface of many of the fields of Ury is still very apparent; but it was much more so before he dressed them in their present form. In almost every field there were deep hollows, which in the winter, or in rainy weather, became pools, some larger and some less, of stagnated water. These did not owe their origin at all to springs, but existed merely in consequence of their situation, incumbent on an adhesive sub-soil that admitted of no filtration. In the winter they were always full, but grew less as the season became drier; and some of them, in the prevalence of the drought of summer, became, through evaporation alone, altogether dry.

It is evident, that whatever might be the produce of coarse herbage that might occasionally grow in these hollows, or by the margin of these pools, there could be no crop of grain raised from them. But this was not adapted to Mr. Barclay's ideas of the use of soil, and he resolved to rid himself of them at once. His method was this:—He first caused a trench to be made, no matter to what depth, till he laid them completely dry, and thus got access to the soil at the bottom. This soil was generally of a considerable thickness, and had been acquired by a gradual accumulation of the finer particles of soil that had been washed down from the conterminous heights, and had been rendered of a still more fructifying nature from the residuum of the vegetables which, from year to year, had alternately grown up and decayed upon their margin. This was too valuable to be lost. He therefore caused it to be cut out, and to be either carted or wheeled out with a barrow, beyond the limits of the hollow. The next work was to cast in stones from the contiguous fields, and to fill it up, not merely for the space occupied by the soil now taken out, but to as great a height as the water was wont to stand in the winter season. The last operation was to carry back the excavated soil, and spread it upon the surface of

the stones. Thus, a noxious pool was converted into soil the most valuable in the field. I am credibly informed, that, in many of these old pools, the quantity of stones carted into them is upwards of six feet in depth: and that the number of such instances of improvement, from that extent downwards to that of two or three feet of filling up, is very considerable indeed.

After all, these three ways of disposing of the stones, though they must have consumed a quantity almost inconceivable, have not been able completely to swallow them up; for, so very much did they abound originally, that many thousand cart-loads are still to be seen, that were tumbled, as the last resource, over the banks towards the channel of the river.

4. *Application of Lime.*—After the various and expensive operations of draining, trench-ploughing, and removal of stones, immediately followed the application of lime. Previous to the era of Mr. Barclay, the use of lime as a manure was, in this county, very circumscribed, though not altogether unknown in this respect; but, in these days, its powers appear to have been overrated. This may be inferred from the practice which then prevailed, of sowing it over the surface by the hand from a sheet, by which means, a few bushels were made to overspread an acre. The effect which this meagre sprinkling had upon the soil, is not indeed stated; but it could not have been considerable. There is, however, more reason to admire than to despise, in this particular, the exertions of those ancient husbandmen, when we reflect on the state of the roads at the time, by which the carriage of three bushels in a bag, on the back of a horse, was a work of greater labor than now to bring on a cart, three bolls. It may be remarked also, that the thin staple of earth which they had to manure, would require a proportional less quantity to produce an effect. But, be this as it may, the soil formed by Mr. Barclay, being so much deeper than the general soil of the country, required a more liberal allowance of lime, and he gave it a more liberal allowance accordingly. He never applied less, in any case, than forty bolls of shells to the acre, but more generally from fifty to seventy bolls; so that the average may be justly stated at sixty bolls to the English acre. In one particular case, viz. in his garden, which he had trenched to the depth of five feet, he applied no less than at the rate of five hundred bolls to the acre;—a quantity probably more than enough to saturate the whole mass; and, of course, a misapplication, so far as the excess might extend. The boll here specified is what is called the water measure (from being used on shipboard,) or Stonehaven barley measure, of 33 Scotch pints to the firlo, or 132 to the boll.*

This bountiful application of lime seems to have had the desired effect; for, during the whole time of Mr. Barclay's practice, which extended to a period of 38 years, he never had occasion to apply lime a second

time, except in two instances, in which, as the first application did not seem to operate so powerfully as he expected, he repeated the dose.

The lime which Mr. Barclay generally made use of, was imported at Stonehaven from Lord Elgin's limeworks, at Charleston on the Frith of Forth. Stonehaven may be about a mile and a half, at an average, from the different fields to which it was to be applied. This easy distance of land-carriage was a favorable circumstance to his improvements, and almost the only favorable one that attended them. The price of lime was, at first, only 1s. 11d. the boll: it was afterwards increased to 2s.; from which it rose, penny by penny, till it came to 2s. 5d., which was the highest rate that Mr. Barclay had ever to pay. These all seem moderate rates, when compared with 3s. 8d., the present price (in 1807). But this is only a seeming, not a real cheapness; for if we compare the different prices of lime with the prices of labor or of grain, at the different periods, there can be little doubt that 23 pence in 1760 was fully equal in value to 46 pence in the present year.

As Mr. Barclay applied lime to 903 acres on this estate, and limed about thirty acres a second time, and all at the rate of 60 bolls an acre, on an average, the quantity altogether thus made use of will be found to amount to 53,780 bolls; and this, at 2s. 2d., the medium rate of price per boll, will amount to 6064l. 10s. as the prime cost of the lime.

Mr. Barclay's importation of lime was not, every year, in equal quantities. In some years it did not exceed 1000 bolls; in other years there were more than 2000 imported; and, one year, the importation is stated at 4000 and upwards,—thus varying as the exigency of the case required. In like manner, his successor, who inherits a goodly portion of his father's ardor and energy of mind, had in one year, lately, as much land under a course of improvement, as to require an importation of 6000 bolls of lime shells at once.

5. *Enclosing.*—When Mr. Barclay succeeded to Ury, there was not a single enclosure on the whole estate. Indeed, in a country where artificial grasses are unknown and where the only pasture among the arable lands consists of wastes, baulks, and marshes, scattered in various directions, of every size, and in every kind of irregular shape, among the different corn fields, enclosures can make no part of the system. In fact, they could be of no use; for no beneficial application of them could be effected. A country enclosed must always be a country that, in other respects, has undergone some degree of improvement.

Mr. Barclay, in the course of improving his lands to the extent already stated, caused them to be enclosed, field by field, as soon as the previous meliorations had taken place. The whole estate is divided into fifty-two enclosures of various sizes, from fifteen to thirty-five acres; with only four fields below the first size, and five that are above the second. The least field is of four acres, and the largest of sixty. The fences are almost all of ditch and thorn hedge; the one serving as a ready conveyance to the water, and the other as a shelter for the cat-

tle. Very few of the fences at Ury are composed of stones, notwithstanding the superabundance of that material, which lay originally at hand upon every ridge. But the stones, there, were little calculated for building, being all round, water-worn bullets, very inapplicable to a wall of any description, either with or without mortar. Most of the thorn fences have thriven exceedingly. They are, in fact, too luxuriant, some of them being little less than twenty feet high. This height gives excellent shelter to the cattle; but has a bad effect upon the hedges themselves, as the lower part, being too much overshadowed, becomes open and unfencible, and requires much care, by the application of paling from time to time, to keep the cattle properly confined. It has been remarked, in general, on this branch of Mr. Barclay's meliorations, that his fences have been more accurately constructed, and more attention paid to the rearing of them, in the latter part of his improvements, than in the beginning—a circumstance which ought to be expected, as his hedgers would naturally become more expert, and perform the operation more correctly, the longer they were accustomed to the work.

A circumstance in the construction of the gates is worthy of notice, which is, that the horizontal bars are set edgewise up and down, and thus afford, by their position, the greatest strength from a given weight of wood. This may seem so obviously the best mode, as to require no particular remark; yet it is astonishing how little such minutiae are attended to.

6. *Rotation of Crops.*—After the lands were brought into tilth, and had a due application of lime, Mr. Barclay's first crop was oats; after which began his general rotation of a four years' course—1. Turnips; 2. Barley; 3. Clover and other grasses; 4. Wheat; then turnips as at first.

Though wheat is stated as the last in the course I shall begin with it—as part of the culture bestowed on it, in the course of the rotation, was preparatory to the crop of turnips which followed.

Wheat.—This was sown on one furrow from lea after the clover, the ground being previously dunged at the rate of twelve three-horse cartloads of well made farm-yard muck to the English acre. The time of tillage was from the first of October to the middle of November; the quantity of seed nine pecks to the acre, or about two and one-third Winchester bushels. The produce varied considerably, according to the seasons. It was, in some years, not more than five bolls; in other years, it was ten: but on an average of years, it amounted to about six bolls and a half, or twenty-seven and a half Winchester bushels, from the English acre. The measure here understood is by the Stonehaven peas firlo of twenty-two Scots pints; being thus about three and a half per cent. more than the Linlithgow standard. Mr. Barclay, by the time his improvements had extended over most of his lands, had, in some years, 130 acres in wheat.

Turnips.—Mr. Barclay having applied the dung to the preceding crop of wheat, left nothing to be performed to the turnip land but the tillage only. This gave him a great

* This boll is rather more than 4 bushels. See Scottish measures p. 93, vol. 1 of Far. Reg.—Ed.

advantage in the operations of that busy seed time, in which celerity in the progress is frequently more conducive to the prosperity of the crop than any other circumstance.

The ground, being brought into a complete state of pulverization by frequent ploughings, was sown, in the first and second weeks of June, by broadcast, at the rate of one pound weight of seed to the acre. This fashion of sowing the seed, Mr. Barclay had learned in Norfolk, and persevered in it to the last; and, from the very abundant crops which he always raised, it has become matter of doubt with some people, whether to sow broadcast, or in drills, the now general practice, be the most judicious and advantageous method. The greatest objection, perhaps, to the broadcast system, arises from the difficulty, in that mode of culture, of cleaning the land from weeds, as it admits of aid, neither from machinery, nor from the power of animal draught, to assist in the operation; but all must be performed by manual labor alone. Mr. Barclay's land, however, was previously so fully pulverized, and so free of all weeds, either from root or by seed, that very little hoeing was required. The only thing almost to be done, in his fields, was to set off the turnips, by thinning, to a proper distance; a work, indeed, that required no little dexterity. Mr. Barclay, however, had his people so well trained to this nice operation (in which he was remarkably expert himself,) that they could, each of them, go over half an acre in a day; so that, although he sometimes had 130 acres in turnips, the work of thinning, which was constantly done by the hoe, was always accomplished in due season. The crop, in consequence of thus meeting with no neglect, prospered exceedingly; and the plants set off by these different operations—first at three, then at six, and lastly at twelve inches distance, turnip from turnip—soon filled the whole surface, and grew to be a crop of from thirty to forty-five tons weight the English acre. The crop would indeed sometimes exceed the last, but never fell short of the first of these quantities. This vast supply of green food was consumed in two ways—in the fattening of cattle, and the feeding of sheep.

Cattle.—Of cattle, Mr. Barclay had two sets. One set of from five to seven years old, and weighing, each, from forty to sixty stones, at sixteen lib. to the stone Amsterdam, was bought in annually, in the months of July and August. The number of this class was from sixty to seventy, which were picked up in the different fairs in the country or neighborhood, at from 10 to 12*l.* a piece. They were first laid upon his clover fields, then on after grass from the first cutting; and in the course of the season had also a range over the whole stubble land, till about the middle of October, when he began to draw the turnips for them, from the different fields or enclosures under that crop. His method was to draw alternately from one half to two-thirds of the surface on the best of the land, and to leave the remainder to be eaten on the ground. On the inferior parts of the field however, he left the whole to be thus consumed by the cattle or sheep (afterwards mentioned,) which continued on the spot

while the crop lasted. By this method, the least fertile portions of the lands were rendered, for the succeeding crop, nearly as productive as the very best.

These cattle were never fed in houses or in stalls, but at all times in the open field; to which the turnips were carted, and spread over the surface; and there enriched, by the manure dropped, other parts of the grounds, to an extent equal to half of that on which turnips were produced. This practice, however, is not applicable to every situation. The general inclemency of the winter season would render out-doors' feeding impracticable in most cases. But the lands of Ury having a hanging exposure, open only to the south, and intersected by different glens or hollows, are remarkably well sheltered from the storm, from whatever direction it may come; and care was taken to shift the cattle from field to field as the weather required. The lands, too, are particularly dry; so that no bad consequence, from poaching, can arise either to them or to the cattle.

This lot of cattle was fattened off in the course of the winter, and sold, from time to time as they were ready, to butchers from Aberdeen, at from 15*l.* to 18*l.* each, then weighing from 50 to 72 stones a head. Some of a larger kind, bred by himself, were, after the turnips were done, kept on upon the grass till about the end of June, when, weighing, from 80 to 84 stones each, they were sold at from 20*l.* to 21*l.* a piece.

Mr Barclay had another set of cattle of an inferior sort, which he bought in, in the month of October yearly, to about the number of four score. They were generally three years old rising four, weighing from 30 to 40 stones, and cost from 7*l.* to 8*l.* each. These were put into the straw yard, for the purpose of consuming straw and making muck. They were, however, brought out occasionally to the turnip fields, and had a picking from those left by the larger oxen. They got from time to time a larger share, in proportion as the greater cattle were sold off; till, in the end, when the turnip crop was all expended, they were put on the pastures, and completed their feeding by the months of June or July, when they weighed from 40 to 50 stones, and were sold from ten guineas to 12*l.* each.

Sheep.—Mr. Barclay bought in about three hundred wedders yearly, in the month of October, from the Highlands of Banffshire, by the water of Avon, in the parish of Kirkmichael. These were a healthy and hardy black-faced breed, weighed about 12 lib. a quarter, and cost about half a guinea a piece. They were first pastured upon the stubble grounds and after grass, till they learned to eat turnips, which were daily portioned out to them till they fed upon them freely. After this, they were taken from the pastures entirely, and put into the turnip fields, where they fed in flakes erected for the purpose, and in which they had a small quantity of hay in racks. Both flakes and racks were movable, and were carried from field to field, and from place to place in the same field, as occasion required. These wedders

were disposed of from time to time, as they got into condition; beginning by the first of January, and continuing to the first of April; by which time the whole were sold off. The price was from 14*s.* to 16*s.* each, and the weight from 13 to 14 lib. the quarter; the advance upon the price having arisen more from the rise in the value of mutton in the market, than from any advance in the weight of the animal.

Mr. Barclay had also a flock of from 250 to 300 breeding ewes, which he kept generally on the unimproved part of the estate, but brought occasionally, in severe weather in winter, to get a share also of the turnips. About 60 or 70 of the oldest of these were kept on the turnips the whole season over, till they had reared their lambs, which were in general so early ready, as to be sold, from the end of March to the beginning of May, at from 10 to 12*s.* each—reckoned a high price then, about the year 1780. His method of rearing these lambs was somewhat singular. They were kept constantly in the straw-yard, among clean litter, and under the shelter of a shed; but the dams were turned out to the fields to pick up their food among the turnips, from which they were brought home twice a day, and all night to give suck. By this means, the lambs were always kept under shelter from bad weather, which no doubt contributed to their thriving, and made them sooner ready for the market. After the turnips were all consumed, these ewes were turned to the pastures during the summer, where they got fat generally by the end of July, or beginning of August, when they were sold at about 12*s.* each.

The labor required in this system of feeding was wonderfully little. Three men, with two carts and four horses, served for the whole purpose of carting off the turnips. One man drove them off, with three horses into the cart, to the different places where they were to be spread. Two remained on the field, pulling the roots, and packing them in the cart, that remained with one horse. When the carter returned with the empty vehicle, he left it with the horse in the shafts, to be filled in its turn, and with the two tracers now yoked before the other horse in the full cart, set off in full strength, with the loading. In this manner they wrought from morning to night; taking care always to leave the two carts full at night, to be early distributed in the morning, before a new supply could arrive. Two men more were sufficient to tend the whole quantity of sheep.

Barley.—This succeeded in rotation; and, from the fine order into which the land was previously put, never failed to be a good crop. The quantity of seed was eight pecks (about three and one-sixth Winchester bushels,) and the produce about seven bolls (about forty-four bushels) at an average, the English acre. The firlot from which the barley boll is measured, contains, in the vicinity of Ury, 33 Scots pints, which is about six per cent. above the Linlithgow standard.

It was with this crop that the seeds were sown for the succeeding clover crop at the

rate of a bushel of rye-grass seeds, and from ten to twelve lib. of the seed of red clover. Such were the quantities used when the land was intended to be one year only in grass; but when it was meant to remain for pasture, there was added a portion of white and yellow clover, together with some rib grass seeds.

Clover.—This was the last crop in the rotation. About two-thirds of the land thus sown out were reserved for hay, for which the proportion of rye-grass sown among it properly fitted it. This was partly cut a second time in the same season, and partly pastured after the first crop was removed. The other third part was pastured from the beginning, as the great number of cattle kept on the lands required to be provided for accordingly.

In this manner, for two or three, and in some cases, four courses of this rotation did Mr. Barclay employ his improved lands. At last, however, he laid them down wholly in pasture; in which they continue to this day, being among the best in the country. The pasture grounds are let from year to year to cattle dealers, and fetch a rent of from forty shillings to two guineas and a half the English acre.

Plantations.—The most brilliant perhaps, of all Mr. Barclay's achievements, at least that which adorns the face of the country, was his plantations. These were formed at a moderate expense, and yet have every appearance of becoming the most valuable part of the property. And thus combining embellishment with utility, he obtained, at the least original disbursement, the most lucrative prospect in future.

Mr. Barclay, from the first, had a propensity to ornament Ury with growing timber. Even in the life time of his father, he projected and carried into effect some embellishment of this kind, in the vicinity of the mansion, which was then but scantily sheltered with wood, while there was not a single tree on any other part of the estate. This project, however, the old gentleman did not much relish; partly, because it was an innovation; and partly from a regard to the welfare of his sheep, which were thereby curtailed, in some measure, of their pasture. Young Mr. Barclay, however, persevered in his intention; but was obliged to compromise the matter with the sheep, by leaving them free access to the pasture; which put him to the charge of fencing each tree with three stakes and connecting paling, to guard it against depredation. This young wood prospered greatly; and many beautiful trees in it are still pointed out, which he planted with his own hands. This happened about the year 1756.

This successful experiment encouraged him to extend his plantations; which he did upon a great scale, when, in a few years, he came to the possession of the estate, and had the means of gratifying, uncontrolled, his taste for this ornamental branch of husbandry. The ground which he first fixed on for this purpose, was the banks of the water of Cowie; which, as already stated, flows for about three miles

through the lands of Ury. Through this whole extent, there is a bank shelving on each side towards the stream, on an angle more or less acute, but all too steep for tillage. These banks are, in some places, thirty yards in breadth, and in others, one hundred yards or more, from the water edge to the top of the declivity. Both sides taken together, will at an average, extend to about one hundred yards in breadth on the base; and thus in the course of three miles, will amount to fully one hundred acres.

The whole of this is thickly planted with deciduous trees, or what is here called hard wood; in distinction from the evergreen or firs, whose timber is comparatively softer and of less value. There are, indeed, a few spruce and silver firs planted near the upper margin, to afford shelter in that more exposed situation. But through nine parts in ten of the whole plantation, there is only hard wood, such oak, ash, elm, &c. These are abundantly sheltered by the natural warmth of the hollow, which is rendered still more mild from its various windings, occasioning one part to be continually protected under cover of another, from whatever quarter the wind may blow. Nothing can exceed the prosperous state of this beautiful plantation. Many of trees are already nine or ten inches in diameter, and from twenty to thirty feet in height below the branches; and there does not appear to be a misshapen one among the whole; amounting to perhaps 400,000; but there is every rational prospect of, at least, one fourth part coming to complete maturity. The ultimate value must be very great; nor can that prospect be at any great distance of time. In less than half a century hence, the timber wood on this river side (extending to the moderate quantity of 100 acres) will be worth more than all the conterminous 900 acres of arable land put together;—perhaps to more than even the whole arable part of the Ury estate. This assertion will not be deemed too rash, when we reflect that hard wood is now selling at from three to five shillings the cubic foot; and that many thousands of the trees in this plantation contain already more than ten cubic feet of timber each.

It has already been said, that this improvement was obtained at a moderate expense. The precise amount, however, cannot, at this distance of time, be ascertained; but it is not difficult to conceive pretty correctly what it might be. The disbursements, which neither included trench-ploughing, lime, nor removal of stones, would be limited, 1st, to draining of the swamps that originally existed in various places in the banks, and which, from the sloping situation, would admit of great facility in the operation; 2d, of enclosing with ditch and hedge; 3d, of the value of the young plants; and, lastly, of the labor of pitting and planting them;—all which, at the moderate rates that prevailed thirty-five or forty years ago, may be safely estimated at a sum not exceeding two pounds the acre, or £200 in all.

Again, the annual value of the land thus given up to planting, falls to be added

to the estimate, which will be the greatest article in the account. But this will not, after all, exceed 20*l* a year, or 4*s*. the acre; which considering the general worthlessness of the pasture, conjoined with its general inaccessibility, will not be deemed too low a rent. If we take the pains to calculate, on the common principles of arithmetic, what all this may amount to, at compound interest, forborne 70 years, we may, from what is already seen, set down as the period of perfection in the wood—it will come to £17,856. But this sum, considerable as it may in this view appear, is little indeed, compared with the value of 100,000 trees, that may then be reasonably expected to have attained to such a state of maturity as to be worth more than twenty shillings each, at an average.

Besides this plantation on the banks of the Cowie, there are others of hard wood in various clumps, belts and hedgerows, around several of the enclosures. There is likewise a beautiful den, planted partly with hard wood, by a small rivulet which flows from the north towards the house of Ury. Altogether, in this den, and in the different clumps, belts and hedgerows, there may be about sixty acres of plantation; and of this there may be about one-third part of hard wood, with two-thirds of different kinds of fir intermixed. The whole is in a very prosperous condition; and, besides being highly ornamental, and affording much shelter, must ultimately be of great value.

The most extensive, however, of the woods of Ury are entirely of fir, upon the hill sides and hill tops of what may be called the back ground of the improved part of the estate. There, Mr. Barclay has planted upwards of eight hundred acres. These hills, thus clothed with wood, being of considerable altitude and seen from far, have a very happy effect in enlivening the general aspect of the country. The wood itself, however, is not all thriving. In the lower parts of the hills, where the soil is tolerably good, and where the exposure is not too severe, the firs are doing well, and have every appearance of being valuable; but, further up the hill, they get worse and worse; till, at the utmost summit, they have nearly failed altogether. This is owing, in a great measure, to the extreme sterility of the soil on these high and bleak situations; but in part also, to Mr. Barclay himself having made an improper selection of the kind of wood. He had an ill-judged partiality for the Scotch fir, esteeming it the most hardy of the pine race, and the most adapted to the climate of the country. This induced him to plant these more exposed places, almost exclusively, with this kind. Time, however, has shown, that the Scotch fir is not all a hardy plant, but among the most delicate and feeble of the fir species; and will thrive no where, unless it be in some favorite situation, such as in the deep glens in the interior of the highlands where, there can be no question, it grows to a large size, and is a most valuable timber. In all plantations however, along the eastern coast, the larch seems a much more hardy tree, and better adapt-

ed for an alpine exposure. Of this there is a striking example to be met with at Ury itself; where a small plot, planted with larch on the top of one of the hills, continues still vigorous and thriving: while all around, the feeble Scotch firs, after thriving a few years against the sterility of the soil, and the coldness of the exposure, have dwindled down to the size of juniper bushes.

It may be observed, with regard to the plantations on the hilly parts of Ury, that although they cannot be compared with those raised on the lower grounds, yet there is still such a considerable proportion that continue in a thriving condition, as must make them, on the whole, a very profitable concern. The original expense of planting would probably not exceed 15s. the acre; while the value of the pasture on such a wretched soil, can hardly be estimated at any thing at all. So that the whole expense, even calculating it on compound interest to the present day would not exceed £2500; a sum far less than the present value of the thriving part of the plantation, were it appreciated at only sixpence a tree.

When Mr. Barclay commenced his operations, in the year 1760, he employed only the people of the country, that were bred on his own lands, or in the vicinity. At this time the scene of his improvements was very limited in extent, and the number of his work people not great. But in proportion as he acquired the occupation of more of his own lands, his improvements expanded more widely; and more people, from the neighborhood, to carry them on, were required. These, however, were of a cast not altogether to his mind; for he did not meet with that alert service from them that that corresponded with his own ideas of activity. This set him upon getting servants from a more enlightened part of the country; and accordingly he engaged some from the county of Norfolk in England. With the assistance of these English servants, he set himself to the training of his own people to a more dexterous habit of working, and to a more thorough knowledge of his operations; some of which, such as draining, hoeing, planting, enclosing &c. were entirely new; and all of them being on an improved principle, were of course so far an alteration of the common practice. His discipline was severe, but it was very correct. He would admit of no slovenly practice—no slighting of the work. Nor did he require any thing of his people but what he could do himself; for while he delivered out his directions in the most clear and distinct manner, he could, with his own hand, show them the true mode of performance. He could even enforce his authority with something more effective than verbal injunctions; for it is said that the clownish obstinacy of his people was not unfrequently corrected by manual discipline. I have indeed met with different people that confess (and even in some measure glory in it,) that they had the knowledge of their work beat into them by Mr. Barclay. This strict government had the happiest consequences; for not a little of the general dexterity (to be afterwards noticed) in the Kincardineshire laborers, is still to be traced to the original system of their education, established

by Mr. Barclay of Ury. His establishments were indeed very extensive. At Ury alone, he had, in general, from 40 to 60 people constantly employed, either in the common operations of husbandry, or in the extraordinary work of improvement. He employed also from 24 to 32 work horses. He never employed oxen. He could endure no sluggish motion; and his operations were all conducted in a style of too much celerity to admit of the slow pace of the ox.

Along with his Englishmen from Norfolk, he imported several of the Norfolk implements of husbandry; more especially the wheeled plough, and large eight horse wagon. The first of these, as being unquestionably the most correct implement of tillage, at the time, met with a favorable reception in the country, and soon spread to a considerable distance. The more simple and equally effective Scotch plough, improved by Small, has now, however, almost entirely superseded it. The large wagon never came into general use; nor did it extend its influence beyond Mr. Barclay's own lands. It is too expensive and too unwieldy a machine to obtain much footing in Scotland.

Mr. Barclay's operations, however extensive on the lands of Ury, were by no means limited to that estate. His improving hand was stretched over a much larger expanse of country. On his other lands of Allardice, Hallgreen and Dava, situated about ten or twelve miles from Ury, he made many essential meliorations; though not to such an extent as upon Ury, which, being his favorite place of residence, he exerted himself more strenuously towards the decoration. He had also different places in lease to which his improvements were extended.

If we confine our ideas of the benefit conferred on the county, by Mr. Barclay's improvements, to the meliorations which he effected on the lands actually under his own management, his exertions, in this respect, must rank him high in the view of every intelligent and reflecting mind. But his value, as a cultivator, was not so circumscribed. There are other circumstances, that, as an agriculturist, have extended much further the circle of his usefulness. Among these may be stated the happy consequences arising from his having instructed so many of his laborers in the most correct mode of cultivation, who, diverging in various directions, have carried the knowledge, thus acquired, to every place where they have been employed. To have been in the service of Mr. Barclay, always was, and still is, a great recommendation to any servant. Some of these have even advanced themselves into a higher class, and are distinguished as tenants, by a spirit of industry and exertion becoming the disciples of such a great master. His example all along, had also a wide and extensive range. The fame of his improvements spread far; and the light thence diffused, has beamed in a thousand directions over the face of the whole land.

Comparative value.—What may be the real value to the estate itself of Ury, from the improvements made on it by Mr. Barclay is perhaps not very easy to ascertain.

The only facts on the subject that I have to state are first, that 47 years ago, when Mr. Barclay succeeded to the property, the rent of all that part of the estate which he afterwards improved, was £200 a year. 2d. that the rent now of the pastures, as they come, to be let, year by year, runs from £2 to £2 12s. 6d. the English acre. The quantity of improved land is 903 acres; of which, about 300 acres were entirely waste land, and afforded no rent at all. The improved land, however, is not all in pasture. There are three farms, comprehending 334 acres, which are under lease at a rent of from 25s to 30s. the acre. The rent, however, of the whole estate, amounts to about £1650 a year; and there can be little question that, were it now to let, it would bring £1800, or nine times its original value. It must not however be disguised, that, owing to the fall of the value of money this property would have rented, at present though there had not a single improvement been made on it, at £400 a year. But this at all events, leaves £1400 a year, as the increase of rent made by these improvements alone, on this part of the property. Now, though it should be made to appear that Mr. Barclay's improvements should have cost him even more than a principal equal to the above £1400 as interest, yet, as there still remains the value of the plantations—a value that is rapidly increasing—there can be no doubt whatever that Mr. Barclay augmented his fortune by his improvements, very considerably indeed.

Mr. Barclay began his operations in the year 1760; and continued unremittingly to improve and embellish till about 1795. A year previous to this, being elected member of parliament for the county, in the room of Lord Adam Gordon, a stop was put, in a great measure, to his agricultural pursuits. He died April 8th, 1797, in the 67th year of his age.

PLOUGHING BY STEAM.—Some experiments have been tried at Red Moss, near Bolton, Lancashire, in the presence of Mr. Handley, M. P. for Lincolnshire, Mr. Chapman, M. P. for Westmeath, Mr. Smith, of Deanston, and other gentlemen interested in agriculture, with a new and very powerful steam plough, constructed by Mr. Heathcote, M. P. for Tiverton. About six acres of raw moss was turned up in the most extraordinary style; sods eighteen inches in breadth and nine inches in thickness being cut from the furrow, and completely reversed in position, the upper surface being placed exactly where the lower surface had been before. The possibility of ploughing by steam has thus been established, though the machine appears much too complex and costly for common purposes.—[Mining Journal.]

RESULTS OF MACHINERY.—Rapid as the increase of buildings in and about London has been, it is quite outdone by similar operations in Manchester, which is said to contain 700 streets more than it did four years ago.—[Mining Journal.]

C I R C U L A R.

PHILADELPHIA, November, 1836.

SIR—I take the liberty of informing you, that, within a few months past, I have perfected several very valuable improvements in the Locomotive Steam Engine, which have given better results than have ever been obtained by the best Locomotives in Europe or America, and respectfully call your attention to the following extracts, viz.:

From the Railroad Journal, New-York, July 16, 1836.

"LOCOMOTIVE ENGINES ON INCLINED PLANES.—The Locomotive Steam Engine, 'GEORGE WASHINGTON,' made for the State of Pennsylvania, by William Norris, of Philadelphia, was placed on the Columbia and Philadelphia Railroad, on Saturday afternoon, the 9th instant. On the following morning, her powers were tested, in ascending the Inclined Plane near Philadelphia. This plane is 2800 feet in length, with an ascent in that distance of 196 feet, or at the rate of 369 feet to the mile, or 7 feet rise in 100 feet, or 1 foot in 14. The weight of the Engine is 14,930 lbs. only. The load attached weighed 19,200 lbs. including the weight of 24 persons who were on the Tender and Burthen Car. The Engine started immediately at the base, without a running start, and dragged up said load of 19,200 lbs. the above distance of 2800 feet, in the space of two minutes and one second, or at the rate of 15½ miles per hour; pressure on the boiler a fraction under 60 lbs. to the square inch. The Engine then descended the plane with the same load at various speed, frequently stopping to test the security, the valves being reversed, or set for going ahead; and when it was desired to stop altogether, the steam was let on very slowly, which brought her to a dead stand for a second or two, when she would immediately start up the grade. In this way, stopping and starting at pleasure, the time occupied in descending the 2800 feet, was from 12 to 15 minutes, thus testing the perfect security of her performance on the plane. She again ascended the plane with the same load and took her place on the road, the same morning, ready for use."

From the Pennsylvania Inquirer, July 21.

"IMPORTANT IMPROVEMENT.—THE GEORGE WASHINGTON LOCOMOTIVE.—We invite attention to the following. It notices an improvement of a most important character. A friend, who enjoyed the pleasure of an excursion in a car drawn by this new locomotive, speaks of her beauty and power in the most enthusiastic terms. We trust that some correspondent, acquainted with the subject, who has had an opportunity of examining the GEORGE WASHINGTON, will furnish a detailed account of this new and important improvement.

"FROM THE UNITED STATES GAZETTE.—Mr. Chandler—The undersigned was yesterday one of a party of about fifty gentlemen, who met at the invitation of Mr. William Norris, to be witnesses to the success of an experiment, which, as the consequences will be of almost incalculable benefit to the public in general, I will endeavor to give you an account of.

"We assembled at 4 o'clock, A. M., and proceeded to the foot of the inclined plane on the Columbia Railroad, near the Schuylkill, where we found Mr. Norris's new Locomotive Engine, the 'GEORGE WASHINGTON,' in waiting for us, to test her powers in taking us up the plane without assistance from the stationary power.

"We started, ascending most majestically the whole distance of 935 yards in 2 minutes and 23 seconds, being at the rate of a mile in 4½ minutes, thereby showing to the world that, thanks to Mr. Norris, the enormous expense of stationary engines on Railroads was no longer necessary.

"We were unable to ascertain the exact weight of two of the passenger cars, but estimating three tons each, would make our whole weight fourteen tons, and that calculation is believed to be below the mark; the rise in the plane is 7 feet in every 100 feet, or 1 foot in 14½ feet; and the greatest power that has ever been before attained, was, in England, to ascend without any extra weight, 1 foot in 60 feet, and in America, 1 foot in 42 feet. Very little reflection will convince every one of the great importance of Mr. Norris's recent discovery or improvement.

"The company, amongst whom were several gentlemen of distinguished talents, Messrs. Campbell and Roberts, engineers, Mr. Ortlip, superintendent, Mr. Smith, commissioner, Messrs. Minor and Schaeffer, from New-York, Mr. Schwartz, from Paris, &c. &c., breakfasted at the Paoli, and proceeded to Lancaster to dine and celebrate the event.

"After dinner, it being understood that his Excellency, Governor Ritner, was in the town of Lancaster, and his engagements not allowing of coming all the way to Philadelphia, he accepted an invitation from Mr. Norris, to take a short excursion on the road, for the purpose of seeing the powers of the engine; and judging by his manner and expressions, his gratification must have been more than ordinary.

"We returned to the city about 8 o'clock in the evening, convinced of the success of our host, Mr. Norris, and having, in the language of one of our party, lived six days in one."

From the National Gazette, July 21.

"On Tuesday, the 19th instant, a Locomotive Engine, manufactured by Mr. William Norris, of this city, ascended the Inclined Plane on the Columbia Railroad, drawing with great ease her Tender, and two Passenger Cars, with 53 passengers. Any thing approaching this result has never been attained hitherto, either in England or this country.

"The length of the plane is 2800 feet, the grade 369 feet to the mile, or an ascent of 196 feet in the length of the plane.—The experiment was tried at a very early hour in the morning, while the rails were wet with dew, and of course not in the most favorable condition. The time occupied in passing from the level at the base, to that at the top of the plane, was 2 minutes and 24 seconds. The experiment was witnessed by many scientific gentlemen, among

whom the opinion was general, that the improvement of Mr. Norris promises a most important reduction in the expense hitherto attending the transportation on inclined planes. The weight of the Engine with water, 14,930 lbs.; load dragged on the plane, including tender and fuel, cars and passengers, 31,270 lbs. Pressure under 80 lbs. to square inch. It is remarkable that the Engine was blowing off, on her arrival at the top, having acquired speed and power during the ascent."

From the Railroad Journal, New-York, July 30

"EXCURSION TO PHILADELPHIA, AND REMARKABLE PERFORMANCE OF THE LOCOMOTIVE 'GEORGE WASHINGTON.'—In pursuance of our request, Mr. Norris made arrangements with the commissioners of the Columbia Railroad, for the use of his locomotive. Tuesday, July the 19th, was the day appointed for the trial. We left here on Monday afternoon, at 4 o'clock, accompanied by Mr. George N. Miner, of this city, Mr. Theodore Schwartz, of Paris, and Messrs. Elliot and Betts, of Alabama. Mr. Schwartz, who was to sail for Europe the next day, gladly made the trip, with a view to carry home his own testimony as an eye witness. Our journey over the Camden and Amboy, and Trenton and Philadelphia Railroads was highly interesting, and the conversation of that evening will long be remembered with pleasure. We arrived at Philadelphia about midnight and after sundry mistakes and mischances succeeded in obtaining some repose. On Tuesday morning, two cars, drawn by horses, set out with a party of upwards of forty. We arrived at the foot of the inclined plane before 6 o'clock, while the rails were yet quite wet with dew. On our arrival, it was found that, owing to accident or design, while the fire was burning, the water had been blown out of the boiler so as to endanger the tubes. The result was a leakage of some consequence during the day. The Engine started at the foot of the plane and on the plane. After proceeding a few feet, the wheels were found to slip, and the Engine returned. It was said that the rails were found to have been oiled at this place; a small quantity of sand was strown over the spot, and the Engine again proceeded. She regularly and steadily gained speed as she advanced to the very top, passing over the plane in 2 minutes and 24 seconds. The enthusiasm of feeling manifested cannot be described; so complete a triumph had never been obtained; the doubts that had been entertained by some, and the fears of others, were dispelled in an instant; the eager look that settled upon every one's face, gave way to that of confident success, while all present expressed their gratification in loud and repeated cheers.

"The length of the plane is 2800 feet; the grade 369 feet to the mile, or 1 foot rise in 14.3 feet, which is a much steeper grade than the planes on the Mohawk and Hudson Railroad, those being 1 foot in 18 feet, making an ascent of 196 feet in 2800 feet; weight of Engine with water, 14,930 lbs.; load drawn up the plane, including weight of Tender with water and coal, two Pas-

senger Cars and 53 passengers, 31,270 lbs.; pressure in the boiler, less than 80 lbs. to the square inch; time of running 2 minutes and 24 seconds. It is to be remembered that the rails were wet with dew. As to the oil, it was afterwards mentioned that bets were made with the workmen to a considerable amount, and those having been lost by the successful performance of the Engine on a former day, were now quadrupled, and to save themselves it is not unlikely that this means was provided to accelerate the descent rather than the ascent of the Engine. At the conclusion we shall give the dimensions of this Engine.

"The party again embarked, after examining the workshops, and proceeded to Paoli to breakfast, and thence to Lancaster, the Engine conveying at the same time a number of freight cars.

"The unfortunate location of this road is very evident; frequent and short curves are introduced so uniformly, that it would be supposed that such a location was to be preferred to a direct one. We arrived safely at Lancaster, and partook of an excellent dinner. A number of toasts were given, and conversation turned generally to the subject of internal improvement.—Mr. Roberts, engineer of the Harrisburg road, and Mr. H. R. Campbell, engineer of the Norristown, and of the West Philadelphia Railroad, were present; a number of the company were citizens of Philadelphia. After dinner, the company were presented to Governor Ritner, who was then in town. He afterwards accompanied the party some few miles from Lancaster and back again, when he left us, much gratified with his rapid journey. We returned in a large eight wheel car, a form that we much admired. The whole weight attached to the Engine (tender, &c. included,) must have been over 14 tons, if not 15 tons. The time of running (exclusive of stoppage,) from Lancaster to the head of the Schuylkill inclined plane, was 3 hours and 11 minutes, being a distance of nearly 67 miles. This, it is to be remembered, was over a road having curvatures of less than 600 feet radius, up ascents of sometimes 45 feet per mile. On level and straight portions of the road, a velocity of 47 miles was attained. As the trip had already been protracted, this engine was obliged to leave at the head of the plane, on her return to Lancaster the same evening, and we descended by the rope.

"The following are the dimensions of the 'GEORGE WASHINGTON' Engine, of Mr. William Norris: Diameter of cylinders 10½ inches; length of stroke 17½ inches; number of tubes 78; outside diameter 2 inches; length 7 feet; diameter of driving wheels 4 feet; diameter of truck 30 inches. The Engine is six wheeled, having two driving wheels. Whole weight of Engine 14,930 lbs., actual weight on driving wheels 8700 lbs.

"It must be remembered that there is no contrivance, as in some engines, for increasing the adhesion, by throwing the weight of the tender upon the engines, the axle being in front of the fire box, preventing any such arrangement. This engine,

we are now informed, is making the regular trips, though a full load has not yet been obtained, on account of the scarcity of cars. The greatest load, as yet, drawn by it over the road, was 119 tons, gross weight, in 22 cars. The engineer confidently expects to draw 150 tons, at 12 or 15 miles per hour. She now usually works with 70 lbs. pressure of steam.

"The following is a list of the names of the gentlemen who were of the party:

"We, the subscribers, were present and witnessed the experiment and complete success of the 'GEORGE WASHINGTON,' in ascending the inclined plane, with a train of cars, containing 54 persons, besides engineers, firemen, &c., up the Columbia Railroad, at Philadelphia, on the 19th July, 1836.

Israel Morris,	Israel Roberts,
William Morrison,	S. Griffiths Fisher,
A. M. Eastwick,	Joseph Harrison, Jun.
Franklin Peale,	R. M. Patterson,
T. E. Gubert,	Theodore Schwartz,
F. Blackburne,	E. Durand,
George R. Oat,	Townsend Smith,
Isaac P. Morris,	Frederick Vogel,
George Robbins,	Rufus Tyler,
A. W. Thompson,	Robert B. Davidson,
Frederick Gaul,	Alex'r. Krumbhaar,
William S. Otis,	D. K. Minor,
Alexander M'Clurg,	T. R. Peale,
P. B. Goddard, M.D.,	Octavius A. Norris,
J. Sidney Jones,	Joseph Oat,
Mahlon Ortlip,	James Poultney,
J. C. Cresson,	John E. Garrett,
George N. Miner,	George C. Schaeffer,
M. M. Reeve, M.D.,	H. R. Campbell,
Smith Jenkins,	Daniel Smith,
Thomas Moore,	
Walter Sims, Nashville, Tenn."	

From the National Gazette, October 19.

"INCLINED PLANES.—The new Locomotive Steam Engine, 'WASHINGTON COUNTY FARMER,' built for the Commonwealth of Pennsylvania, by Mr. Norris, of this city, was placed on the Columbia Railroad, on Tuesday afternoon.

"The power of the Engine was then tested in ascending the Inclined Plane, which was performed to the complete satisfaction of numerous scientific gentlemen, invited expressly for the occasion.

"The plane is 2800 feet long, ascent in that distance 196 feet, equal to 369 feet to the mile, or 1 foot rise in 14 ⅓ feet. Weight of Engine 18,170 lbs. with water included. Load drawn up, 30,116 lbs. including Tender with fuel and water, two large Passenger Cars and 39 passengers. Time of running, 3 minutes and 15 seconds, pressure in the boiler under 70 lbs.

"In descending the plane, the engineer repeatedly came to a dead stand from a great speed, and for some minutes played up and down the grade, thus proving most satisfactorily, the immense power of the Engine, and the perfect safety in its performance. The Engine is a master-piece of machinery and of beautiful exterior.

"The result here obtained has never been equalled by the best Engines in this country or Europe, excepting only similar performances of the 'GEORGE WASHINGTON,' an Engine by the same maker.

"The advantage of this great improvement in Locomotive Engines, is self-evident; Railroads can be constructed at much less cost than heretofore, now that engines can be procured (of the usual weight) to perform on grades of 70 feet or even 100 feet rise in the mile."

From the Pennsylvania Inquirer, October 20.

"INCLINED PLANES.—MR. NORRIS'S ENGINE.—We were much gratified on Tuesday, in witnessing the new Locomotive Steam Engine, built by Mr. Norris, of this city, for the commonwealth of Pennsylvania. It ascended the Inclined Plane in admirable style, and performed, to the entire satisfaction of a numerous party of scientific and other gentlemen who were present.

"In order that our readers may fully understand the nature of the ascent, we annex the following statistics of the Inclined Plane: length, 2800 feet; ascent, 196 feet.

"The above ascent is equal to 369 feet in a mile, and is a rise of 1 foot in 14 ⅓ feet.

"The Engine, which is called the 'WASHINGTON COUNTY FARMER,' weighs 18,170 lbs. The load drawn up, including fuel and water, two large Passenger Cars, with 29 passengers, weighed 30,116 pounds. The pressure in the boiler was under 70 lbs., and the ascent occupied 3 minutes and 15 seconds.

"In descending the plane, the engineer caused the Engine to stop suddenly several times, though previously going at great speed; and he twice moved the Engine up and down the Inclined Plane at pleasure; thus showing at once its great power and safety."

The "GEORGE WASHINGTON" has been, since July 19th, performing daily over the Columbia Railroad, length 82 miles, with trains of from 18 to 25 cars, frequently making two trips per day, and in some instances three trips in 21 hours. The largest number of Cars, in one train, drawn by this Engine over the road, has been 35; 18 loaded, 3 half loaded, and 14 empty, making a load of 128 tons, which was performed in the usual running time of 12 miles per hour. The greatest load drawn by this Engine, has been 137 tons, in 27 cars.

The "WASHINGTON COUNTY FARMER" is now in successful operation; the first load drawn by her over the road, consisted of 28 loaded cars, weighing 141½ tons.—The ascents in this road are very heavy; the least being 28 feet rise per mile, the majority 32 feet and the greatest 47 feet. This Engine, with the load of 141½ tons, passed over the steep ascent of 47 feet per mile, which is upwards of three-fourths of a mile long, at the unprecedented rate of 22 miles per hour.

I have just completed extensive buildings and workshops, and am prepared to execute orders for Locomotive Engines, with despatch, all of which shall have my late improvements, and are warranted to be made of the best materials and superior workmanship.

WILLIAM NORRIS, Philadelphia.

AN ENGINEER, regularly bred to the Profession in England, as well as to that of a Topographical Surveyor and Draughtsman, is desirous of obtaining employment in the United States. He has lately, for several years, been a salaried officer of one of the Principal Land Companies in the British Provinces, from the agents of which he can produce unexceptionable references.

On the subject of Railways he would feel particularly at home, having had much experience in their survey and formation while in England, and he confidently hopes that he would give satisfaction in all the other branches of the Profession.

Apply to the Office of this paper, 132 Nassau-st., or to Dr. Bartlett, at the office of the Albion, Cedar-street.

TO PLOUGHMEN.

THE Subscriber has upwards of three hundred acres of meadow land, in the sod, near the city of New York, that he wishes to have PLOUGHED, as early in the course of the next year as practicable. He wishes to CONTRACT for the whole, or any part. It must be ploughed four inches deep, the furrow must be turned completely over, so that the whole will lie flat—to plough a great part of this land advantageously and speedily, a double team of light cattle is preferable to one pair of heavy oxen. Provender for men and cattle can be procured on the premises. Apply by letter, directed to Anthony Day, 63 Cedar-street, corner Nassau-street, New-York, by mail or otherwise, stating terms etc.

rr4t-12in-48

A. DEY.

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads.

No. 264 Elizabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlem Railroad now in operation. J25t

AN ELEGANT STEAM ENGINE AND BOILERS, FOR SALE.

THE Steam Engine and Boilers, belonging to the STEAMBOAT HELEN, and now in the Novelty yard, N. Y. Consisting of one Horizontal high pressure Engine, (but may be made to condense with little additional expense) 36 inches diameter, 10 feet stroke, with latest improved Piston Valves, and Metallic packing throughout.

Also, four Tubular Boilers, constructed on the English Locomotive plan, containing a fire surface of over 600 feet in each, or 2500 feet in all—will be sold cheap. All communications addressed (post paid) to the subscriber, will meet with due attention.

HENRY BURDEN,

Troy Iron Works, Nov. 15, 1836.

47—t

HARVEY'S PATENT RAILROAD SPIKES.

THE Subscribers are manufacturing and are now prepared to make contracts for the supply of the above article. Samples may be seen and obtained at Messrs. BOORMAN, JOHNSON, AYRES & Co. No. 119 Greenwich Street, New-York, or at the Makers in Poughkeepsie, who refer to the subjoined certificates in relation to the article.

HARVEY KNIGHT.

POUGHKEEPSIE, October 25th, 1836.

The undersigned having attentively examined HARVEY'S PATENT FLANGED AND GROOVED SPIKES is of the opinion, that they are decidedly preferable for Railroads to any other Spikes with which he is acquainted; and shall unhesitatingly recommend their adoption by the different Railroad Companies whose works he has in charge.

BENJ. WRIGHT,

Chief Engineer N. Y. & E. R. R.

NEW-YORK, April 4th, 1836.

Harvey's Flanged and Grooved Spikes are evidently superior for Railroads to those in common use, and I shall recommend their adoption on the roads under my charge if their increased cost over the latter is not greater than some twenty per cent.

JNO. M. FESSENDON, Engineer.

Boston, April 26th, 1836.

No. 44—7t.

ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order. IRON CASTINGS for Gearing Mills and Factories of every description.

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

PATENT RAILROAD, SHIP AND BOAT SPIKES.

THE Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y., July, 1831.

Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. (1J23am) H. BURDEN.

NEW ARRANGEMENT.

ROPE FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Durpee, Coleman & Co., for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

8th month, 8th, 1836. Hudson, Columbia County, State of New-York.

E. S. TOWNSEND, GEORGE COLEMAN.
ROBT. C. FOLGER, SYDNEY S. DURFEE

33—t

FRAME BRIDGES.

THE subscriber would respectfully inform the public, and particularly Railroad and Bridge Corporations that he will build Frame Bridges, or vend the right to others to build, on Col. Long's Patent, throughout the United States, with few exceptions. The following sub-Agents have been engaged by the undersigned who will also attend to this business, viz.

Horace Childs,	Henniker, N. H.
Alexander McArthur,	Mount Morris, N. Y.
John Mahan,	do do
Thomas H. Cushing,	Dover, N. H.
Ira Blake,	Wakefield, N. H.
Amos Whitmore, Esq.,	Hancock, N. H.
Samuel Herrick,	Springfield, Vermont.
Simeon Herrick,	do do
Capt. Isaac Damon,	Northampton, Mass.
Lyman Kingsly,	do do
Eljah Halbert,	Waterloo, N. Y.
Joseph Hebard,	Dunkirk, N. Y.
Col. Sherman Peck,	Hudson, Ohio.
Andrew E. Turnbull,	Lower Sandusky, Ohio.
William J. Turnbull,	do do
Sabrid Dodge, Esq.,	(Civil Engineer,) Ohio.
Booz M. Atherton, Esq.,	New-Philadelphia, Ohio.
Stephen Daniels,	Marietta, Ohio.
John Rodgers,	Louisville, Kentucky.
John Tillison,	St. Francisville, Louis'a.
Capt. John Bottom,	Tonawanda, Penn.
Nehemiah Osborn,	Rochester, N. Y.

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawanikeng river on the Military road, in Maine. On the national road in Illinois, at sundry points. On the Baltimore and Susquehanna Railroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contocook river at Hancock, N. H. Across the Connecticut river at Haverhill, N. H. Across the Contocook river, at Henniker, N. H. Across the Souhegan river, at Milford, N. H. Across the Kennebec river, at Waterville, in the state of Maine. Across the Genesee river, at Mount Morris, New-York, and several other bridges are now in progress.

The undersigned has removed to Rochester, Monroe county, New-York, where he will promptly attend to orders in this line of business to any practicable extent in the United States, Maryland excepted.

MOSES LONG.

General Agent of Col. S. H. Long

Rochester, May 23d, 1835.

19y-tf.

An English Engineer, who has had the advantage of some experience, and is in possession of good testimonials, is desirous of being employed on a Railroad or under an Engineer of character in the United State, as Assistant.

Address this office—post paid.

50—3t

An Engineer is desirous of obtaining a situation, on some work, either Railroad or Canal; he would have no objections to go on to any part of the United States.

Satisfactory references given as to character and capacity. Address W. H. W. at this office—post paid.

504t

A SPLENDID OPPORTUNITY TO MAKE A FORTUNE.

THE Subscriber having obtained Letters Patent, from the Government of France, granting him the exclusive privilege of manufacturing Horse Shoes, by his newly invented machines, now offers the same for sale on terms which cannot fail to make an independent fortune to any enterprising gentlemen wishing to embark in the same.

The machines are in constant operation at the Troy Iron and Nail Factory, and all that is necessary to satisfy the most incredulous, that it is the most VALUABLE PATENT, ever obtained, either in this or any other country, is to witness the operation which is open for inspection to all during working hours. All letters addressed to the subscriber (post paid) will receive due attention.

Troy Iron Works,

HENRY BURDEN.

N. B. Horse Shoes, of all sizes will be kept constantly for sale by the principal Iron and Hardware Merchants, in the United States, at a small advance above the price of Horse Shoe Iron in Bar. All persons selling the same, are AUTHORIZED TO WARRANT EVERY SHOE, made from the BEST REFINED IRON, and any failing to render THE MOST PERFECT SATISFACTION, both as regards workmanship and quality of Iron, will be received back, and the price of the same refunded.

H. BURDEN. 47—t

RAILWAY IRON, LOCOMOTIVES, &c

THE subscribers offer the following articles for sale. Railway Iron, flat bars, with countersunk holes and milled joints,

	lbs.	per ft.
350 tons 2½ by 1, 15 ft in length, weighing 4½	350	4½
280 " 2 " 1, " " " 3½	280	3½
70 " 1½ " 1, " " " 2½	70	2½
80 " 1½ " 1, " " " 1½	80	1½
90 " 1 " 1, " " " 1	90	1

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2½, 24, 34, 36, 38, and 39 inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and stone block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

Mr. Solomon W. Roberts, a highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us

A. & G. RALSTON.

28—t Philadelphia, No. 4, South Front st.

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)

NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

H. R. DUNHAM & CO.

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